

TEACHING

Rapid and Slow Learners in High Schools

**The Status of Adaptations in Junior, Senior, and Regular
High Schools Enrolling More Than 300 Pupils**

**A Group Project in Secondary
Education Written by**

**ARNO JEWETT }
J. DAN HULL } *Coordinators***

KENNETH E. BROWN

HOWARD H. CUMMINGS

PHILIP G. JOHNSON

MARY LAXSON

JOHN R. LUDINGTON

BERENICE MALLORY

DAVID SEGEL

**U. S. DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE . . . OVETA CULP HOBBY, Secretary
Office of Education SAMUEL MILLER BROWNELL, Commissioner**

UNITED STATES GOVERNMENT PRINTING OFFICE, WASHINGTON : 1954

**For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 35 cents**

Contents

FOREWORD	Page V
<i>Chapter I</i> BACKGROUND, PURPOSE, AND SCOPE OF STUDY.....	1
<i>Chapter II</i> ADMINISTRATIVE PROVISIONS FOR RAPID- AND SLOW-LEARNING PUPILS	6
<i>Chapter III</i> TECHNIQUES USED IN DISCOVERING RAPID- AND SLOW-LEARNING PUPILS	14
<i>Chapter IV</i> INSTRUCTIONAL PROVISIONS	20
<i>English</i>	21
<i>Social Studies</i>	32
<i>Mathematics</i>	42
<i>Science</i>	49
<i>Home Economics</i>	59
<i>Industrial Arts</i>	69
<i>Chapter V</i> Improving Instruction in Local Communities	77
APPENDIX Questionnaire and Covering Letter Used in Study	81

Tables

1. Schools Providing Responses About Administrative Provisions	6
2. Percentages of Schools Reporting the Use of Administrative Provisions for Rapid- and Slow-Learning Pupils, by Type of Organization and Size of School	8
3. Techniques Used in Discovering Rapid- and Slow-Learning Pupils—Rapid Learners	16
4. Techniques Used in Discovering Rapid- and Slow-Learning Pupils—Slow Learners	17
5. Instructional Provisions and Procedures in English—Rapid Learners	22
6. Instructional Provisions and Procedures in English—Slow Learners	26
7. Instructional Provisions and Procedures in Social Studies—Rapid Learners	34

CONTENTS

	<i>Page</i>
8. Instructional Provisions and Procedures in Social Studies— Slow Learners	36
9. Instructional Provisions and Procedures in Mathematics— Rapid Learners	38
10. Instructional Provisions and Procedures in Mathematics— Slow Learners	44
11. Instructional Provisions and Procedures in Science—Rapid Learners	50
12. Instructional Provisions and Procedures in Science—Slow Learners	54
13. Instructional Provisions and Procedures in Home Economics— Rapid Learners	62
14. Instructional Provisions and Procedures in Home Economics— Slow Learners	64
15. Instructional Provisions and Procedures in Industrial Arts— Rapid Learners	70
16. Instructional Provisions and Procedures in Industrial Arts— Slow Learners	74

IV

Foreword

MOST PUBLIC HIGH SCHOOLS in the United States are designed to serve all youth of the community rather than particular groups of youth with special or peculiar interests and abilities. Individual pupils in high school differ greatly, and meeting a wide range of educational needs in the same school and often in the same class presents many difficulties. There is danger of adopting procedures for numbers of pupils who are most alike and neglecting those who vary from the average.

This is not to suggest that educational needs of so-called average pupils are being met adequately. The purpose of the school is to meet the educational needs of individuals, and pupils vary even within a middle group. Moreover, procedures useful with those who vary from the average may also be useful with individuals who are termed average.

Teaching Rapid and Slow Learners in High School represents a cooperative effort of nine secondary-school specialists in the Office of Education to picture the provisions used in large high schools to adapt teaching methods in different subjects for pupils who are not average. It is recognized that a pupil may be a rapid learner in one subject and a slow learner in another. Each of the specialists gathered and reported the information relating to his special field. A common pattern was followed in presenting the data in tabular form. As will be obvious to the reader, each writer was encouraged to use his own individual style in describing and interpreting the data in his tables.

Responsibility for coordinating the project and editing the manuscripts was assumed by Arno Jewett, specialist for language arts, and J. Dan Hull, chief of the Secondary Schools Section.

It is hoped that the bulletin will stimulate local schools to examine their own procedures with a view to improving them. Suggestions for using the bulletin are included in chapter V. Many principals and teachers have found the questionnaires useful in inservice education activities, and for others who may have this interest the questionnaires have been included in the appendix. The questionnaires may be reproduced without permission. While this bulletin is concerned with present status, specialists in the Office of Education expect to develop a later publication describing promising procedures in particular schools.

This report, if serving the purpose for which it is intended, will aid in stimulating widespread discussion and evaluation of procedures useful in meeting individual differences in high school. The problem is worthy of all the ingenuity and resourcefulness which can be summoned to meet it.

WAYNE O. REED
*Assistant Commissioner,
Division of State and
Local School Systems*

GALEN JONES
*Director,
Instruction, Organization,
and Services Branch*

CHAPTER I

Background, Purpose, and Scope of Study

A CENTRAL PROBLEM in our democratic school system is the instruction of pupils with widely diverse interests and capacities so that they will live and work together happily in a constructive social and spiritual environment. The increasing growth of the comprehensive high school with its heterogeneous population complicates the problem of providing a superior educational program for every youth. Extensive variations among pupils in their intellectual, physical, social, and emotional development help to produce wide differences in educational achievement. Diversity in home and community background, as well as in motives and goals for learning, also cause differences in pupil performance. Nationwide efforts to increase the holding power of the school, to eliminate dropouts, and to promote youth on the bases of social and chronological growth further complicate the task of administering and teaching high-school pupils.

Today, the improvement of holding power and employment of social promotion have added immeasurably to the instructional difficulties of the high-school teacher. During the 20 years between 1931 and 1951, the proportion of youth remaining in high school until graduation almost doubled. Fifty-two of each 100 pupils who were in the fifth grade in 1944 were graduated from high school in 1951. In 1930, the number of graduates was 29 out of 100; in 1900, 16; and in 1870, only 2.¹ The present trend in holding power is definitely upwards. Although social promotion policies are meeting resistance from some teachers in the upper grades of high school, there seems to be sufficient support of the practice to suggest that it will be continued. Naturally, increased holding power and social promotion have extended the range of individual differences at the lower extreme and have increased the number of pupils at both extremes of the high-school student population. Many more slow pupils are being promoted to the junior and senior years of high school. Also, more of the rapid learners, especially from average and below-average-income families, are staying in school. This is a trend which should continue.

When the slow learner who falls below the average attainment of his class in reading and other skills moves into the high school, he adds in a disproportionate degree to the teacher's class load. There is often conscious or subconscious pressure on the teacher to bring the below-average pupil up to class norms; for the teacher is aware that the child's academic deficiencies may make him the target of criticism from parents as well as from principals and later teachers of the child.

Under normal conditions the slow learner will continue to lag behind more intelligent youth in his academic attainments. The more he advances in

¹ Statistical Summary of Education, 1949-50, Chapter I of the Biennial Survey of Education in the United States, 1949-50. Washington, U. S. Government Printing Office, 1953 p. 24, table 19.

the typical high school, the greater will be the differences between his academic skills and knowledge and those of brighter pupils. Standards of scholarship for him must be lower than for the average and superior child. Too often, parents, and occasionally teachers and principals, expect all children to be at the class norm in academic achievement.

Some teachers who have taught for many years in the last 2 or 3 years of an academic high school have had little firsthand experience with large numbers of slow learners. They may be unaware of the difficulties these children have in learning and of the ways they learn best. Because the slow-learning student has difficulty understanding and recalling the verbal concepts which are common in the academic curriculum, he requires careful guidance and a concrete, often individualized, type of instruction which is time consuming both for him and the teacher. Also, because of cultural conditioning, such teachers may not recognize the vocational and leisure-time needs of slow learners or even be sympathetic with their problems.

A concern for improved education of the rapid and slow learners is particularly appropriate at this time because of the much-publicized procession of youth which is beginning to push through junior-high-school doors into the already bulging classrooms of heavily loaded teachers. According to present estimates, this procession of American youth will continue for at least 10 years and by 1959-60 will swell the high-school enrollment (grades 9-12) by almost 50 percent above 1949-50 figures.² Unless the American people decide to spend a higher percentage of their income for public education, teachers may expect larger classes and heavier teaching loads for at least the next decade. Also, they may anticipate extremely crowded conditions in classrooms, study halls, and libraries.

Forces outside of the United States have also caused educators to be concerned with the effectiveness of their program for rapid and slow learners. With the entry of the Communist Chinese in the Korean war came a sudden realization that America's reservoir of protective strength was smaller in numbers of people than that of its enemies. As Americans we realized more than ever before that our national security depends upon an educated citizenry and requires the maximum utilization of all the best brainpower in America if we are to continue our democratic civilization. A new concept of defense relying more than ever on advanced weapons and machines has been adopted. Our intricate tools, machines, and weapons require thoroughly educated and carefully trained personnel. As a result, we are seeking ways to identify our talented, superior, and gifted youth; and we are searching for administrative and instructional means to improve the quality of their education.

Because of these conditions and problems in American education, but particularly because of requests for assistance from teachers and principals in administering, identifying, and teaching rapid learners, the Secondary

² Report of the Status Phase of the School Facilities Survey, Washington, U. S. Government Printing Office, 1953. p. 12.

Schools Section of the Office of Education, in the spring of 1952, launched the study described in this bulletin.

The chief purposes of this study are (1) to determine the extent to which certain practices in providing for individual differences are being used in public high schools today, (2) to identify and describe promising practices which high-school staff members are using in teaching rapid and slow learners, and (3) to encourage and help high schools to study ways in which they can make better provisions for their rapid and slow learners. The present bulletin is concerned chiefly with the first and third purposes. Later bulletins relating to particular subject-matter areas will describe promising practices and programs in operation.

For this study *rapid learners* are defined as those students who rank among the highest 15 to 20 percent in general intelligence; *slow learners* are considered to be those students who are distinctly below the average in intellectual capacity, ranking among the lowest 15 to 20 percent in general intelligence. Obviously, the definitions are arbitrary and somewhat amorphous. It was considered desirable to include a relatively large proportion of students in both the upper and lower groups because teachers today need help with large numbers of students—not just the extreme few who are gifted or mentally deficient.

Since the spring of 1952, nine staff members of the Secondary Schools Section, the Guidance Section, and the Home Economics Education Branch of the Office of Education have worked together in studying current practices considered useful in meeting the educational needs of rapid- and slow-learning pupils. Areas studied by the staff members include: administration, guidance, language arts, social studies, mathematics, science, industrial arts, and home economics. As a committee, this group first prepared and tried out an experimental form of a questionnaire which was sent to nine secondary schools of different types. These schools were located in various regions of the Nation. Principals and their staff members studied, tried out, criticized, and returned the experimental form. After final revision, the questionnaire was then submitted to principals, guidance officers, and teachers in 1,200 high schools with enrollments over 300. These high schools are considered to be representative of all regions of the United States.

The Questionnaire

The questionnaire was divided into three major parts: Part I, Administrative Provisions for Rapid- and Slow-Learning Pupils; Part II, Techniques Used in Discovering Rapid- and Slow-Learning Pupils; and Part III, Instructional Provisions and Procedures. Part I was a status study of administrative provisions, *being used or tried and abandoned*, for rapid and slow learners. Provisions for acceleration, ability grouping by class, special courses and curriculum, social promotion, and enrichment were among the items included. Part II was also a status study of the extent

to which various tests, records, reports, and other methods of evaluation were used in discovering rapid- and slow-learning pupils.

Part III of the questionnaire contained six subparts, one in each of the following subject-matter areas: language arts, social studies, mathematics, science, home economics, and industrial arts. The primary purpose of this part of the study was to determine the extent to which certain instructional practices were being used by teachers considered extremely effective in teaching (a) rapid learners and (b) slow learners. Descriptions of various practices, methods, and materials which might be used in teaching rapid and slow learners were included in each subpart of the questionnaire. Respondents, the head or senior teacher in each department, were asked to indicate the extent to which their most effective teacher was employing various techniques and materials with (1) rapid learners and/or (2) slow learners. Instructions to respondents for each section of the questionnaire may be read in the appendix. Also, respondents were asked to describe in detail any outstanding program which they had found to be unusually successful with rapid and slow learners.

The questionnaire method of gathering data has certain limitations of which the reader should be cognizant as he reads the data in the following chapters. First, nonrespondents to a questionnaire frequently have less favorable data to report than the respondents. In some instances, respondents tend to give an overly optimistic picture of conditions within their school system. Also, because the language used in a questionnaire does not always convey the same meaning to different respondents, the validity of replies is subject to question. One of the recognized weaknesses in this study is the varied subjective interpretations which respondents might give to the verbal symbols *NONE*, *SOME*, and *MUCH* on the three-point scale where they are asked to show the "extent of use" of various techniques, provisions, and procedures by extremely effective teachers. However, in the preparation of the questionnaire, the imperfections of language as a medium of communication were carefully weighed and every possible effort was made to convey instructions and ideas clearly.

The Sample

In the sample of 1,200 secondary schools to which the questionnaire was sent were 300 regular high schools, 600 junior high schools, and 300 senior high schools, all over 300 in enrollment.² No 6-year undivided high schools were included as those conducting the study did not want to obscure the differences between junior and senior and regular high schools. Insofar as size of school was concerned, the percentages of the sample were distributed as follows: schools between 300 and 499 enrollment, 33.23 percent; schools between 500 and 999, 43.62 percent; and schools 1,000 and over, 23.15 percent.

² Statistics of Secondary Day Schools, 1953-54. Chapter 5 of the Biennial Survey of Education in the United States, 1950-51. Washington, U. S. Government Printing Office, 1954.

Returns, complete and incomplete, were received from slightly more than 850 schools. Over 70 percent of the junior high schools in the sample returned the questionnaire; 50 percent of the senior high schools; and 81 percent of the regular high schools. Schools ranging in size between 300 and 499 enrollment averaged a return of 64.20 percent; those between 500 and 999, a return of 72.40 percent; and those 1,000 or over averaged a return of 79 percent.

Usable returns for the various subsections of the questionnaire varied in number, as is shown later in the discussions of each subsection. Returns were not considered usable for the purposes of this study when they appeared to be hurriedly or carelessly prepared and when the school was of a type (vocational, elementary, etc.) not within the scope of this study. In a few instances, complete changes in type of school had occurred since the collection of 1951-52 data.

CHAPTER II

Administrative Provisions for Rapid- and Slow-Learning Pupils

PART I of the questionnaire included 23 provisions which a high-school principal could make in a school to facilitate the educational progress of rapid- and slow-learning pupils. Following the purposes of the study, the writers selected the 23 provisions not only for their usefulness in determining status, but also for their helpfulness in identifying promising practices which might be described in later publications and in stimulating school staffs to make additional provisions for meeting individual differences. Twelve of the provisions were classified as suitable for both rapid and slow learners, 6 as beneficial for rapid learners, and 5 as being useful for slow learners. For each provision the high-school principal was asked to check "yes" or "no" to indicate whether or not the provision was being used in his school.

The 795 usable returns which were tabulated represented a 60-percent response. The number of usable responses from schools in the different categories may be seen in table 1. For each of the six classifications and for the total, the percentage of schools reporting the use of each of the 23 administrative provisions is shown in table 2. The 12 provisions for rapid and slow learners, the 6 provisions for rapid learners, and the 5 provisions for slow learners are ranked in order of their reported use among the 795 responding schools.

Table 1.—Schools providing responses about administrative provisions

Type of school	Enrollment			Total	
	300-499	500-999	1,000+	Schools	Percent
1	2	3	4	5	6
Junior high schools.....	118	198	86	397	50
Senior high schools.....	43	60	32	135	17
Regular high schools.....	99	115	49	263	33
Total schools.....	260	368	167	795	
Percent.....	33	46	21		100

Provisions for Both Rapid and Slow Learners

Among the 12 provisions for both rapid and slow learners, item 1, "teachers furnished guidance information pertinent to pupils," was used most (by 90 percent of the schools), and item 12, "flexible graduation requirements as to credits," was used least (by 38 percent of the schools). The mean of the percentages of schools using the 12 different items was 0.55. Judging by means, the 12 provisions were used most by senior high schools and least by junior high schools. By size of enrollment the provisions were used most by the larger schools and least by schools enrolling 300-499 pupils.

A number of the provisions, as determined by the criteria previously mentioned, are broad and inclusive. For example, the fact that 90 percent of the schools furnish guidance information pertinent to pupils does not necessarily mean that all the teachers use the information. In some cases it may lie unused in the files. The fact that 13 percent of the junior high schools reported job placement services (item 7) means that this provision includes temporary jobs on Saturdays and after school, as well as more permanent jobs which offer vocational opportunities to senior-high-school graduates. Supervised work experience is a broad category including all kinds of work. This provision was reported by one-third of the junior high schools (item 8), but when a number of principals were questioned about the nature of the work, they reported all of it as being within the school and most of it without pay.

Junior high schools reported more use than other schools of the last 3 of the 12 provisions for both rapid and slow learners. Credit given for demonstrated achievement regardless of time spent in class (item 10) involves credit for demonstrable skills, such as swimming, skating, and playing a musical instrument, as well as credit for achievement as indicated by test scores. If special schools of any kind exist, the problem of transferring pupils to them (item 11) first comes into focus during the junior-high-school years and probably is as pressing then as at any later period. Flexible graduation requirements as to credits (item 12) may involve extra credit for quality of achievement or some aspect of social promotion, either of which probably encounters less resistance in the junior high school than in the senior high school.

Small schools more than large ones tended to provide supervised work experience (item 8) and individualized instruction outside of regular class hours (item 6). These findings are not surprising since neither provision depends upon the resources commonly associated with larger schools.

Almost half the schools reported attempts to place pupils in ability groups of some kind (item 5). Schools were asked to name the subjects for which attempts had been made to provide homogeneous groups for both rapid and slow learners, and for slow learners alone. In both instances the subjects mentioned most frequently were English, mathematics, social studies, and science.

Schools were invited to indicate which of the 23 administrative provisions they had tried and abandoned, and the reason for giving up any procedure. Responses to this query were meager and hardly worth reporting except, possibly, for the attempt to group pupils homogeneously. This administrative provision had been tried and abandoned by 3 principals of senior high schools, 4 principals of regular high schools, and 16 principals of junior high schools. The reasons given most frequently were: "parents raised objections," "social stigma was created," "results were not apparent," "provisions were inconsistent with the philosophy of the school," and "the staff preferred to adapt instruction to the individual pupil."

Table 2.—Percentages of schools reporting the use of administrative provisions for rapid- and slow-learning pupils, by type of organization and size of school

Item No.	Item	Percent using administrative provisions, by type of organization					Enrollment			
		All schools (785)	Junior high school (287)	Senior high school (180)	Regular high school (298)	200-499 (295)	500-999 (288)	1,000+ (187)		
1	3	2	4	5	6	7	8	9		
A. PROVISIONS FOR BOTH RAPID AND SLOW LEARNERS										
1	Teachers furnished guidance information pertinent to pupils.	90	93	94	95	92	96	96	96	
2	Teachers assigned on basis of traits and interests suitable for work.	82	80	80	81	79	84	86	86	
3	Regular classes furnished advanced study materials and additional learning aids.	79	80	81	77	80	77	84	84	
4	Space, furniture and equipment for flexible grouping in classes and activities.	62	57	64	65	62	60	69	69	
5	Ability (homogeneous) classes. (Pupils grouped according to IQ, reading ability, previous grades, social maturity, etc.)	48	46	53	49	25	22	22	22	
6	Individualized instruction outside of regular class hours.	47	47	46	46	42	47	45	45	
7	Job placement services.	46	13	58	79	46	46	43	43	
8	Supervised work experience.	46	35	60	60	30	43	43	43	
9	Summer-school sessions provided.	44	48	60	30	30	47	47	47	
10	Credits given for demonstrated achievement regardless of time spent in class.	43	47	30	40	44	44	44	44	
11	Transfer to special school encouraged.	36	40	30	30	30	39	39	39	
12	Flexible graduation requirements as to credits.	36	45	30	30	35	35	41	41	
	Mean.....	55	52	62.5	56	52	53.5	59.5	59.5	
B. PROVISIONS FOR RAPID LEARNERS ONLY										
13	College-preparatory curriculum.	78	71	93	85	81	82	83	83	
14	Pupils permitted to carry above-normal class load for graduation credits.	87	30	81	86	86	86	86	86	
15	Elective classes in advanced or specialized subjects (Journalism, electronics, calculus, etc.).	68	39	74	68	40	47	63	63	
16	Remedial sections for able pupils whose performance is below capacity.	37	44	30	30	30	34	34	34	
17	Teachers assigned on basis of training and experience with rapid learners.	36	34	45	34	25	25	25	25	
18	Pupils sectioned in classes which do 3 years' work in 1; or 3 years' work in 2, etc.	4	4	4	3	2	3	7	7	
	Mean.....	43	35	54.5	49.5	39	43	52.8	52.8	

C. PROVISIONS FOR SLOW LEARNERS ONLY

19	Easy study materials related to pupils' interests.....	77	80	73	74	77	77	77
20	Promotion of pupils on basis of physical and social development.....	85	79	44	28	58	56	58
21	Remedial sections where performance is below capacity in basic skills.....	83	89	41	48	43	53	79
22	Low ability classes in certain subjects.....	82	48	54	27	46	52	83
23	Teachers assigned on basis of training and experience with slow learners.....	81	54	50	45	49	51	86
	Mean.....	87.6	62	48.6	52	52.8	57.6	65.6

1 Number of usable returns.

*Items are arranged in rank order within subdivisions A, B, and C and do not conform to original numbering on the questionnaire.

Provisions for Rapid Learners

Of the six provisions listed for rapid learners only, the provision used by the greatest percentage of schools reporting was the college-preparatory curriculum (item 13). The provision used by the smallest percentage of schools was the sectioning of pupils in classes which do 2 years' work in 1 year or 3 years' work in 2 years (item 18, a systematic procedure for accelerating pupil progress). Provisions for rapid learners only were used most by senior high schools and least by junior high schools. The only provision used more by junior high schools than by regular and senior high schools was item 16, providing remedial sections for able pupils whose performance is below capacity. This procedure is sometimes used in reading improvement programs.

Large schools reported greater use of provisions for rapid learners only than did small schools. The one exception was item 14. Permitting pupils to carry above-normal class loads for graduation credit was reported by a larger percentage of small schools (300-499) than larger schools. Here again, this provision can be carried out without using the superior personnel resources often associated with large high schools.

Provisions for Slow Learners

The five provisions for slow learners only were used by higher percentages of schools reporting than were provisions for rapid learners only, and provisions for both rapid and slow learners. The employment of easy study materials related to pupils' interest (item 19) was reported most often. Junior high schools reported the greatest use of each of the 5 provisions except the one relating to low ability classes in certain subjects (item 22). The percentages of schools making provision for slow learners are in direct proportion to the size of schools reporting. The only exception is that a greater percentage of small schools than larger schools report the promotion of pupils on the basis of physical and social development. Here again, this provision is one that can readily be carried out in a small school.

Among all the schools in this study, more consideration is given to the assigning of teachers qualified to work with slow learners than to teachers qualified to instruct rapid learners (items 23 and 17). The wisdom of this practice may be seriously questioned. Because the difficulties of instructing slow learners are apparent, their needs demand careful consideration in the day-to-day operations of the school. Nevertheless, it seems equally important to make sure that each teacher assigned to work with rapid learners is a person of special training, experience, and, also, intellectual superiority.

Comparisons With the 1932 National Survey

Although the questionnaire was not prepared with a view to comparing the status of provisions for individual differences today with that of 20 years ago, it is possible to make a number of comparisons between the present study

and the 1932 National Survey of Secondary Education.¹ The 60-percent response of usable returns in the present study compares favorably with the 40-percent return received in 1932.²

In the present study supervised work experience of some kind and job placement services for regular or occasional jobs are currently reported in most schools except for the junior high schools where the immaturity of pupils limits the usefulness of these provisions. In 1932 these provisions were so infrequent that they were not even mentioned in the National Survey. Forty percent of the schools included in the National Survey did report that they were giving credit for out-of-school projects or studies. However, a followup indicated that most of the projects were Smith-Hughes activities, most of the out-of-school studies were generally some kind of instrumental music, and relatively few pupils were involved.³

In the 1932 study 25 percent of the schools reported individualized instruction.⁴ In the present study 47 percent of the schools report individualized instruction outside of regular class hours.

Although almost half the schools in the present study reported the attempt to group pupils homogeneously, the percentages of schools using this practice are smaller in most categories than they were in 1932, as reported in the National Survey of Secondary Education. In 1932, 55 percent of the reporting schools enrolling 251-500 pupils indicated the use of homogeneous grouping.⁴ In the current study only 35 percent of the schools enrolling 300-499 pupils reported using this administrative provision (table 2, item A5). In the National Survey, 68 percent of the schools enrolling 501-750 pupils, and 72 percent of the schools enrolling 751-1,000 pupils reported the use of homogeneous grouping.⁴ In the current study, only 52 percent of the principals in schools of this enrollment range said they were using this procedure. For schools enrolling more than 1,000 pupils, the percentages reporting homogeneous grouping were 76 in 1932 and 62 in 1953.

Similarly, the percentages of junior high schools and senior high schools using homogeneous grouping declined between 1932 and 1953.⁵ However, the percentage of regular high schools reporting homogeneous grouping increased from 24 percent in 1932⁵ to 49 percent in 1953.

According to the National Survey of 1932, more attention was being given to the educational needs of slow learners than to those of rapid learners.⁶ The current study reveals a similar emphasis insofar as administrative provisions are concerned.

In the present study 90 percent of the reporting schools provide pertinent guidance information about pupils. This emphasis on guidance appro-

¹ U. S. Office of Education. *Provisions for Individual Differences, Marking, and Promotion*. Bulletin 1932, No. 17; Monograph No. 13. Washington, U. S. Government Printing Office, 1933. p. 7.

² *Ibid.*, p. 399.

³ *Ibid.*, p. 9.

⁴ *Ibid.*, p. 48.

⁵ *Ibid.*, p. 47.

⁶ *Ibid.*, pp. 196 and 197.

priately parallels efforts to meet needs of increasingly diverse pupil bodies by the expansion of the curriculum which occurred between 1934 and 1949.¹ Between 1934 and 1949, increases were also reported in remedial courses in English and mathematics.² In the present study the growth of these remedial courses is reflected in the fact that 53 percent of the schools reported the use of remedial sections where performance is below capacity in basic skills (table 2, item 21). It appears that in high schools enrolling more than 300 pupils, there are widespread efforts to meet individual differences through a wide variety of subject offerings and through the use of guidance information pertinent to pupils and remedial classes.

More than one-third of Monograph No. 13 of the National Survey of Secondary Education, *Provisions for Individual Differences, Marking, and Promotion*, deals with the Morrison plan, the Dalton plan, the Winnetka technique, and other plans characterized by a unit method. Since 1932 advocacy of these particular versions of the unit plan, as such, has almost disappeared from professional literature. At the same time, many features of the unit have been adopted by teachers and other educators. Increasingly, textbooks for high-school pupils are organized by units of work, or at least authors claim that they are so organized. New courses of study and teaching guides usually recommend the use of resource units for instructional purposes. J. Minor Gwynn states:

The chief characteristic of the modern organization of the curriculum, then, is the integration of learning matter into comprehensive units. The problem method, the project method, and other approaches have been advocated, the underlying idea of each being to organize the curriculum into meaningful areas of activity.³

While no item in the questionnaire dealing with administrative provisions for rapid- and slow-learning pupils was related to a unit plan of teaching, in the questionnaires dealing with specific subject-matter areas, many questions were related to this type of instruction. The responses indicated that the great majority of effective teachers were organizing instructional materials in large units which facilitated assignments related to the interests, needs, and abilities of individual pupils.

Probably the most effective teachers were using resource units and teacher-pupil planning of some kind. In the light of what is now known and believed about how children learn, these procedures appear more defensible than some of the rigid and more formal features of the Morrison and Dalton plans.

In the 1932 National Survey of Secondary Education it was reported that "provisions for individual differences, in general, are innovations in the

¹ U. S. Office of Education. *Offerings and Enrollments in High-school Subjects, Biennial Survey of Education in the United States, 1948-50, Chapter 5*. Washington, U. S. Government Printing Office, 1951, pp. 26 and 27.

² *Ibid.*, p. 28.

³ Gwynn, J. Minor. *Curriculum Principles and Social Trends*. Revised Edition. New York, The Macmillan Co., 1930. p. 214.

secondary schools"¹⁰ and that "comparatively few schools are making thorough provisions for individual differences."¹¹ These conclusions were reached because of the comparatively small numbers of schools in the study reporting the use of the 28 different provisions for individual differences which were listed in the questionnaire.

In the current study the provision related to the practice of systematically accelerating pupils is the only 1 of the 23 not being used by a considerable number of schools. Indicated are an awareness of individual differences and diverse and rather general attempts to meet them. Whether the attempts are thorough and effective cannot be determined by questionnaires.

Summary

A quantitative appraisal of responses to the 23 administrative provisions for rapid- and slow-learning pupils indicates that:

1. School staffs are aware of individual differences among pupils and are making many administrative provisions to meet these differences.
2. Schools are making more administrative provisions for slow learners than for rapid learners.
3. In general, senior high schools are making the greatest number of adaptations, and junior high schools the fewest. The only exception is that junior high schools make more adaptations for slow learners than either senior high schools or regular high schools. It is reasonable to suppose that junior high schools have a higher proportion of slow learners than do other high schools.
4. For most of the 23 provisions there is a direct relationship between the size of schools and the number of administrative provisions for rapid and slow learners.
5. Comparatively fewer schools are using homogeneous grouping than 20 years ago. However, about half of the schools in this study reported such grouping.

¹⁰ U. S. Office of Education. *Provisions for Individual Differences, Marking, and Promotion*. Bulletin 1932, No. 17; Monograph No. 13. Washington, U. S. Government Printing Office, 1933. p. 2.

¹¹ *Ibid.*, p. 2.

CHAPTER III

Techniques Used In Discovering Rapid- and Slow-Learning Pupils

ADMINISTRATORS and teachers who wish to make special provisions for rapid- and slow-learning pupils must first identify such pupils. In this study an effort was made to discover the approximate extent to which schools are using certain types of identification procedures as described in part II of the questionnaire. The 20 items in part II include most of the procedures which schools might have occasion to use.

Of the 1,200 schools receiving copies of the questionnaire, 814 returned data considered usable for this part of the study. As has been stated on page 4, returns from some schools may tend to reflect more desirable conditions than actually prevail; they may reveal philosophy considered best, rather than actual practice. Another possible limitation lies in the values assigned by the respondents to the categories showing extent of use: NONE, SOME, MUCH. The amount of practice which each school would rate as SOME would naturally differ from place to place. Methods used to compute the means shown in tables 3 and 4 are described on pages 20 and 21.

Overall Use of Identifying Factors

With these limitations in mind, the results of the questionnaire may be analyzed. From the results shown in tables 3 and 4 and from examination of the questionnaires themselves, it is clear that practically all schools use some identifying data. About 95 percent of them indicated that they use more than 10 of the 20 practices. Schools adhere to the generally accepted principle that the more you know about a pupil the better you can adapt instruction for him.

Use of Standardized Tests

Four items have to do with standardized tests. As is shown by tables 3 and 4, group intelligence tests and standardized achievement tests are used extensively in discovering both slow and rapid learners. A large number of schools use these tests as a regular procedure for identifying pupils at some point in the school system. Individual intelligence tests are seldom used except by large high schools (over 1,000) which employ such tests to discover slow learners. Probably the main use of individual intelligence tests is to retest individuals who score low on group intelligence and achievement tests. Standardized aptitude tests applied to specific fields (item 18) are not generally used for identification of rapid and slow learners. An explanation of this condition may be that the prognostic tests available are tied so closely to specific high-school subjects¹ that only when the teacher is

¹ Such as the Foreign Language Aptitude Test of the Iowa Placement Examinations or the California Algebra Aptitude Test.

especially interested will be use them. It is not known whether the use of the newer multiple aptitude tests¹ is reported under item 2, group intelligence tests. Where these new tests are used, one of the purposes might be to identify fast and slow learners.

Anecdotal Reports and Records

Except for one category of schools, anecdotal reports and records are rated neither low nor high. Large high schools do make considerable use of them for discovering both rapid and slow learners. Also, such records are apparently used a little more in junior high schools than in other types of schools. Anecdotal reports or records are difficult to quantify. It is highly probable that they are used by teachers to study pupils for general adjustment, and only incidentally for identification of fast and slow learners.

Teachers' Estimates of Achievement, Aptitude, and Intelligence

Four items cover various types of teachers' estimates of achievement, aptitudes, and intelligence. As might be expected, teachers' marks are used most often in identifying rapid and slow learners. Teachers' estimates of achievement also rate high. Actually these two approaches are essentially the same. Teachers' ratings of aptitudes has an intermediate position on the scale, while teachers' estimates of intelligence is in the lowest four of the rankings. The neglect of teachers' ratings of aptitudes and intelligence shows that teachers tend to think of variations among pupils largely in terms of achievement. Since teachers' judgments of achievement include the personal reaction between teacher and pupil, it is important to note that intelligence tests and achievement test results are often used in conjunction with the teachers' evaluation in discovering rapid and slow learners.

Appraisal by Persons Other Than Teachers

Appraisal of pupils' interests, aptitudes, and abilities by guidance counselors is an item which received relatively high ranks and means for large high schools. Parental appraisal has the lowest rating of all. Parents are apparently not brought into the process of identification for administrative or instructional purposes. Probably the chief occasion for parental participation occurs when the parent becomes concerned about the progress of his own child.

The difference between the use of the counselor's appraisals and homeroom appraisals is significant. The former attains a substantially high rating in senior or regular high schools, whereas homeroom appraisals have a low rating in these schools. In junior high schools, on the other hand, the rating is the same for the two types of appraisals. This variation may be a reflection of the greater dependence on the person in charge of the homeroom in junior high school than in senior or regular high schools.

¹ Such as the Differential Aptitude Tests or the SRA Primary Abilities Tests.

Table 2.—Techniques used in discovering rapid- and slow-learning pupils, by type of organization and size of school

RAPID LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (514)		Junior high school (408)		Senior high school (142)		Regular high school (206)		300-400 (262)		500-999 (380)		1000+ (172)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Teachers' marks.....	1.72	1	1.70	1	1.73	1	1.73	1	1.08	1	1.74	1	1.73	2
2	Group intelligence tests.....	1.58	2	1.62	2	1.66	2	1.48	2	1.46	2.5	1.50	2	1.73	1
3	Teachers' estimates of school achievement.....	1.49	3	1.53	3	1.43	3	1.43	3	1.46	2.5	1.51	3	1.51	4
4	Standardized achievement tests.....	1.42	4	1.53	4	1.37	6	1.26	6	1.22	5	1.42	4	1.54	3
5	Information on physical health.....	1.38	5	1.46	5	1.33	7	1.26	6	1.25	4	1.37	5	1.46	6
6	Guidance counselor's appraisal of pupils' interests, aptitudes, and abilities.....	1.30	6	1.22	9	1.47	4	1.29	6	1.15	9	1.28	7	1.50	5
7	Information on vocational plans.....	1.26	7	1.15	13.5	1.48	3	1.36	4	1.27	6	1.30	6	1.30	7
8	Information on reading interests and habits.....	1.25	8	1.32	6	1.21	8	1.13	8	1.20	7	1.27	8	1.29	8
9	Information on home environment.....	1.21	9	1.27	7	1.14	9	1.14	9	1.19	8	1.23	9	1.13	11
10	Anecdotal reports and records.....	1.13	10	1.16	12	1.09	11	1.10	10	1.06	10	1.10	12.5	1.25	9
11	Information on personality adjustment.....	1.12	11	1.17	10.5	1.11	10	1.08	12.5	1.07	12	1.13	10.5	1.19	10
12	Teachers' estimates of aptitudes.....	1.11	12	1.15	13.5	1.08	12.5	1.08	11	1.08	11	1.13	10.5	1.14	12
13	Information on physical maturity.....	1.10	13	1.17	10.5	1.08	12.5	1.01	14	1.06	13.5	1.10	12.5	1.16	12
14	Homeroom adviser's appraisal of pupils' interests, aptitudes, and abilities.....	1.06	14	1.25	8	.94	18	.83	19	.97	16	1.09	14	1.09	15
15	Information on social maturity.....	1.05	15.5	1.13	15	1.00	15.5	.98	16	1.01	15	1.06	15	1.12	14
16	Information on hobbies.....	1.05	15.5	1.03	16	1.03	14	1.06	12.5	1.06	13.5	1.06	16	1.01	16
17	Teachers' estimates of intelligence.....	.96	17	1.01	17	.89	19	.93	17	.90	17	1.08	17	.91	18
18	Standardized aptitude tests in specific fields.....	.90	18	.79	19	1.00	15.5	.90	15	.87	18	.93	18	.88	19
19	Individual intelligence tests.....	.88	19	.86	19	.96	17	.84	18	.86	19	.86	19	.94	17
20	Parental appraisal of pupils' interests, aptitudes, and abilities.....	.73	20	.77	20	.61	20	.73	20	.69	20	.73	20	.70	20

¹Number of usable returns.
²Items are arranged in rank order and do not conform to original numbering on the questionnaire.

Table 4.—Techniques used in discovering rapid- and slow-learning pupils, by type of organization and class of school

SLOW LEARNERS

Item No.	Item	Type of organization						Enrollment					
		All schools (814) ¹		Junior high school (408)		Senior high school (143)		Regular high school (209)		500-999 (262)		1,000+ (172)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	1.70	4	1.69	5	1.74	7	1.69	9	1.63	11	1.74	15
2	Teachers' marks	1.80	1	1.82	1	1.83	1	1.81	1	1.83	1	1.83	1
3	Group intelligence tests	1.80	2	1.82	2	1.83	2	1.81	2	1.83	2	1.83	2
4	Teachers' estimates of school achievement	1.80	3	1.82	3	1.83	3	1.81	3	1.83	3	1.83	3
5	Information on physical health	1.80	4	1.82	4	1.83	4	1.81	4	1.83	4	1.83	4
6	Standardized achievement tests	1.80	5	1.82	5	1.83	5	1.81	5	1.83	5	1.83	5
7	Guidance counselor's appraisal of pupils' interests, aptitudes, and abilities	1.80	6	1.82	6	1.83	6	1.81	6	1.83	6	1.83	6
8	Information on vocational plans	1.80	7	1.82	7	1.83	7	1.81	7	1.83	7	1.83	7
9	Information on reading interests and habits	1.80	8	1.82	8	1.83	8	1.81	8	1.83	8	1.83	8
10	Information on home environment	1.80	9	1.82	9	1.83	9	1.81	9	1.83	9	1.83	9
11	Anecdotal reports and records	1.80	10	1.82	10	1.83	10	1.81	10	1.83	10	1.83	10
12	Information on personality adjustment	1.80	11	1.82	11	1.83	11	1.81	11	1.83	11	1.83	11
13	Teachers' estimates of aptitudes	1.80	12	1.82	12	1.83	12	1.81	12	1.83	12	1.83	12
14	Information on physical maturity	1.80	13	1.82	13	1.83	13	1.81	13	1.83	13	1.83	13
15	Information on social maturity	1.80	14	1.82	14	1.83	14	1.81	14	1.83	14	1.83	14
16	Homework adviser's appraisal of pupils' interests, aptitudes, and abilities	1.80	15	1.82	15	1.83	15	1.81	15	1.83	15	1.83	15
17	Information on hobbies	1.80	16	1.82	16	1.83	16	1.81	16	1.83	16	1.83	16
18	Individual intelligence tests	1.80	17	1.82	17	1.83	17	1.81	17	1.83	17	1.83	17
19	Teachers' estimates of intelligence	1.80	18	1.82	18	1.83	18	1.81	18	1.83	18	1.83	18
20	Standardized aptitude tests in specific fields	1.80	19	1.82	19	1.83	19	1.81	19	1.83	19	1.83	19
	Parental appraisal of pupils' interests, aptitudes, and abilities	1.80	20	1.82	20	1.83	20	1.81	20	1.83	20	1.83	20

¹ Number of usable returns.

² Items are arranged in rank order and do not conform to original numbering on the questionnaire.

Identification Through Information on Various Characteristics of Pupils

The use of information relating to pupil characteristics, interests, and goals is measured in seven items: Information on personality adjustment, social maturity, physical health, physical maturity, reading interests, vocational plans, and hobbies. Information concerning these characteristics and interests would naturally be used by teachers, counselors, and advisers. Thus they overlap ratings by such personnel.

Two specific characteristics used for identification have fairly high ratings. Information on physical health ranks fifth for rapid learners and fourth for slow learners. Information on vocational plans has a high rating in senior and regular high schools. The reason for the higher rating of this item in the upper years of high school as contrasted with the junior high school is obvious.

With two exceptions the other characteristics have neither high nor low ratings. Information on social maturity ranks 14th for slow learners and 15th for rapid learners. Information on hobbies ranks 16th for both groups.

Summary

The four items used in discovering or identifying rapid- and slow-learning pupils which received the highest rankings were those which are often used for homogeneous groupings. They are teachers' marks, group intelligence tests, teachers' estimates of school achievement, and standardized achievement tests. Use of these techniques usually provides quantitative data useful for grouping of pupils. Most of the other items are not so easily subject to quantification by groups and therefore are probably used by teachers primarily in considering pupils as individuals.

There is not much difference in the use made of the 20 practices for rapid learners and for slow learners. However, there are substantial differences between schools of different size. Individual intelligence tests are used most frequently by large schools (over 1,000) in identifying slow learners. Large high schools also report more extensive use of anecdotal reports and records for both rapid and slow learners than do other schools. Guidance counselors are used to a greater extent in large schools than in smaller schools. Parents are seldom consulted for the purpose of discovering rapid and slow learners. On the average, large high schools and junior high schools are making more use of the 20 practices included in the questionnaire than are schools in other categories.

As is pointed out in the section on "Administrative Provisions for Rapid- and Slow-Learning Pupils," schools are using various administrative methods for facilitating the instruction of slow and rapid learners. Many of these methods avoid homogeneous grouping, but employ adaptations within each class. Although the methods being used to discover rapid and slow learners are largely of the quantitative type discussed above, many schools are using the teacher in each class to identify certain traits. This trend means that

the various characteristics and needs of youth must be studied comprehensively. The identification of the capabilities of pupils for learning is one of the more important aspects of the whole problem of the adjustment of the school to individual needs.

CHAPTER IV

Instructional Provisions

IN ADDITION to the study of ways in which rapid and slow learners are identified and are provided for administratively, information was obtained concerning instructional provisions and procedures used by teachers considered extremely effective in teaching rapid learners and slow learners. Part III-A of the questionnaire was addressed to the head of the English department; part III-B, to the head of the social studies department; part III-C, to the head of the mathematics department; part III-D, to the head of the science department; part III-E, to the head of the home economics department; and part III-F, to the head of the industrial arts department. The number of usable returns obtained from the 1,200 schools to which the questionnaire was addressed varied for each subject-matter area. Returns which were obviously checked hastily or carelessly were not considered. Usable returns for the areas ranged from 556 to 795.

Each of the above subsections contains 30 items (except industrial arts, which has 29) which briefly describe instructional techniques and practices which might be used in teaching rapid and slow learners. Some practices were considered especially desirable for rapid learners, others for slow learners, and some for both. A very few practices were included which professional opinion and research do not support as being suitable for teaching such pupils. These items were included as one check of the general validity of the responses. For each item, such as "Help students to find good substitutes for inferior comic books and magazines," the respondent was asked to indicate whether the extremely effective teacher used the practice *NONE*, *SOME*, or *MUCH* with rapid learners and also *NONE*, *SOME*, or *MUCH* with slow learners.

In evaluating the responses to the questionnaire, the authors found the mean response for each item as given for (a) rapid learners and (b) slow learners within the categories under School Type and School Size. For School Type these categories are: Junior High School, Senior High School, and Regular High School (grades 9-12); for School Size the categories are: Schools with 300-499 students, Schools with 500-999 students, and Schools with 1,000 or more students. See headings for table 5.

Within each of these categories the total number of responses for each item (1 through 30) under *NONE*, *SOME*, or *MUCH* were totaled. A response of *NONE* was weighted 0; a response of *SOME* was weighted 1; and a response of *MUCH* was weighted 2. The mean for each item was then obtained by first multiplying the *SOME* responses by 1, the *MUCH* responses by 2, and adding the total; then by dividing this total by the sum of all responses (including those under *NONE*) for each item.

For example, assume that item 1 had the following total number of responses under *NONE*, *SOME*, *MUCH*.

	NONE	SOME	MUCH
Item 1.....	50	100	75

First, the weighted total was found by multiplying 50 by 0, 100 by 1, and 75 by 2. Then these results were added ($100 + 150$) to obtain 250. This sum was divided by the total number of responses for item 1 ($50 + 100 + 75 = 225$). Thus, a mean of 1.11 was obtained by dividing 250 by 225. This mean when compared with other means is interpreted as an index of the relative extent to which a practice was employed by teachers considered to be extremely effective in teaching (a) rapid learners and (b) slow learners.

After the respondent completed his checking of the 30 items, he was asked to describe other provisions being made for rapid and slow learners, and to check the extent to which they were being used. Furthermore, if he had experienced unusual success in adapting his instructional program to rapid learners, to slow learners, or to both, he was asked to describe in detail (1) what was taught, (2) how it was taught, and (3) to whom it was taught. The information obtained from this part of the questionnaire is reserved for inclusion in later bulletins.

English

Reading and Literature

Eight instructional practices and provisions which have been the subject of considerable discussion, debate, and research by teachers of reading and literature were included among the 30 items in part III-A. Practices which respondents were asked to check included the extent to which extremely effective teachers conducted intensive study of the classics, encouraged extensive reading of literature, used simplified versions of classics, provided substitute reading for comic books, taught interpretation of pictures and graphics, and assigned reading based on interests, needs, and abilities of pupils.

For rapid learners, first rank among the 30 techniques and provisions was generally given to "Encourage extensive reading of good literature outside of class." Only for two categories, the junior high schools and the schools between 300 and 499 in enrollment, was this item given a mean rank of second place. As is shown by table 5, senior high schools gave the practice the extremely high mean score of 1.91 for rapid learners. For slow learners the practice of encouraging extensive reading of good literature outside of class ranked considerably lower. See table 6. For junior high schools the mean rank was 10; for senior high schools, 6.5; and for schools with enrollments of 1,000 or more, 12.

In contrast to this widespread emphasis on extensive reading, the returns for the item dealing with intensive teaching of classics gave it a comparatively low rank. Medium (500-999) and large (1,000+) high schools put it in the lowest third of all items. The lowest rank was given by the junior high schools; however, this placement is not significant as few junior high schools teach the classics mentioned in the item. Senior high schools gave

Table 5.—Instructional provisions and procedures in English, by type of organization and size of school

RAPID LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (726)		Junior high school (371)		Senior high school (130)		Regular high school (254)		300-499 (227)		500-999 (236)		1,000+ (167)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Encourage extensive reading of good literature outside of class	1.84	1	1.83	2	1.91	1	1.82	1	1.79	2	1.86	1	1.86	1
2	Require mastery of certain minimum essentials in grammar and usage	1.80	2	1.84	1	1.72	2	1.76	2	1.80	1	1.80	2	1.80	2
3	Teach niceties of expression, such as distinctions between shall and will, between and among, go along and go ahead, may and can, lead and lagged	1.66	3	1.70	3	1.28	13.5	1.80	3	1.68	3	1.68	3	1.69	7
4	Emphasize reading of modern literature related to student interests and needs	1.60	4	1.61	4.5	1.65	3	1.56	4	1.62	4	1.64	4	1.65	5
5	Help students to find good substitutes for inferior comic books and magazines	1.55	5	1.61	4.5	1.51	5.5	1.45	7	1.48	5	1.60	5	1.56	10
6	Encourage work on individual projects related to student and class needs	1.62	6	1.57	6	1.46	8	1.46	8	1.41	7	1.52	6.5	1.67	4
7	Provide experiences as contributing members of small group	1.49	7.5	1.50	7	1.43	9	1.42	10.5	1.38	10	1.53	7	1.59	7
8	Encourage students to evaluate own progress	1.49	7.5	1.55	8	1.38	12	1.48	9	1.37	9	1.52	8.5	1.59	7
9	Provide experiences in responsible group leadership	1.47	9	1.46	10	1.57	4	1.44	8	1.39	8	1.57	6	1.74	3
10	Conduct drills to eliminate recurrent vulgarisms, such as "I ain't," "can't hardly," "he don't," etc.	1.45	10	1.49	9	1.39	11	1.41	12	1.46	6	1.44	11	1.46	12
11	Teach principles of grammar and usage observed by educated leaders in public life who attract large reading and listening audiences	1.39	11.5	1.35	13.5	1.51	5.5	1.40	8.5	1.23	11	1.42	12	1.43	14
12	Allow students freedom in carrying out activities	1.39	11.5	1.46	11.5	1.36	14.5	1.38	15	1.32	12.5	1.38	14.5	1.50	11
13	Teach grammar, composition, and literature together in units organized around ideas, themes, or centers of interest	1.38	13	1.43	11.5	1.37	13	1.30	16	1.24	14	1.45	10	1.44	13
14	Encourage students to note differences in language used by public speakers and writers	1.30	14	1.35	13.5	1.41	10	1.34	14	1.32	12.5	1.38	14.5	1.36	15.5
15	Assign printed materials with difficulty approximating individual's reading age	1.32	15	1.40	12	1.35	15	1.20	17	1.07	22	1.39	13	1.57	9
16	Encourage participation in speech and writing contests	1.31	16	1.34	14	1.20	14.5	1.20	17	1.21	16	1.34	16	1.57	9
17	Teach through pictures, charts, and other graphics	1.30	17	1.36	14	1.16	23	1.25	19	1.22	15	1.31	17	1.37	17
18	Provide extended experiences in evaluating newspapers and magazines for purpose, content and value	1.26	18.5	1.23	21	1.20	17	1.27	17.5	1.19	17	1.26	20	1.30	20
19	Teach through recordings, radio, and other audio aids	1.25	19.5	1.20	17.5	1.20	22	1.25	20	1.12	21	1.30	19.5	1.33	18.5
20	Provide extended experiences in evaluative listening	1.24	20	1.20	17.5	1.21	21	1.17	23	1.17	19	1.30	19.5	1.37	21

21	Conduct detailed, intensive study of classic, such as Shakespeare's plays, <i>Shen Menor, Temple of the King</i> .	1.21	21	.00	26	1.00	7	1.43	10.5	1.13	15	1.23	21.5	1.21	22
22	Assist students in preparing talks and other oral presentations to be given outside of school.	1.19	22.5	1.11	22.5	1.23	13.5	1.27	17.5	1.14	20	1.23	21.5	1.17	23
23	Allow students to choose and plan learning activities.	1.19	22.5	1.26	19	1.23	20	1.08	20	1.03	20	1.23	23	1.35	23.5
24	Teach symbolic interpretation (reading) of pictures, sketches, cartoons, and other graphic material.	1.04	24	1.11	22.5	1.00	25	.93	23	.97	23	1.03	24	1.05	24
25	Teach formal diagramming of sentences.	.99	25	1.04	24	.87	27	.93	24.5	1.01	24	1.04	25	.85	25
26	Require memorization of specified number of lines of poetry or drama.	.98	26	.96	27	1.00	24	.95	24.5	.93	25	1.00	25	.91	27
27	Provide extended experiences in selecting and evaluating movies.	.96	27	.99	25	.80	26	.93	27	.93	27	.91	27	1.01	28
28	Provide extended experiences in selecting and evaluating television programs. (Do not answer if television is not normally available in community.)	.83	28	.90	28	.71	29	.77	28	.93	29	.80	28	.96	28
29	Teach through trips to public library, museums, newspaper plants, and similar places.	.81	29	.87	29	.75	28	.75	29	.93	28	.85	29	.90	28
30	Use simplified and/or abridged editions of books like <i>A Tale of Two Cities</i> for students.	.63	30	.74	20	.34	30	.58	20	.65	20	.64	20	.58	30

¹ Number of usable returns.

* Items are arranged in rank order and do not conform to original numbering on the questionnaire.

the practice of intensive reading for rapid learners a placement of 7; regular high schools, 10½. Their means of 1.50 and 1.42 are reasonably high though much lower than their means of 1.91 and 1.82 for extensive reading. (See table 5.)

The importance of teaching modern literature related to student interests and needs was indicated by the third and fourth-place ranks given this provision. Extremely effective teachers of both rapid and slow learners evidently try to help pupils find literary materials which they will enjoy and appreciate. Although there was very little difference in the rank of this practice for rapid and slow learners, the average mean for rapid learners in all types and sizes of schools was 1.60; whereas the average mean for slow learners was 1.44.

According to the returns, teachers seem to give more attention to the reading interests and needs of rapid learners than to the assignment of materials which have a difficulty level approximating the reading age of the bright pupils. The latter practice was ranked 21st by regular high schools and 22d by small schools (300-499). Highest ranks and means were given by large and medium high schools and by junior high schools. The practice of assigning materials suited to pupils' reading ability received an average rank of 5 for slow learners; however, the average mean was not much higher than for rapid learners.

Poor comic books and magazines are a problem pertaining to rapid as well as slow learners. The item "Help students to find good substitutes for inferior comic books and magazines" received an average rank of 5 for rapid learners. Regular high schools ranked the item 7th; large high schools, 10th. Efforts to wean slow learners away from comic books ranked first for senior high schools, and second and third for other schools responding to the questionnaire. Extremely effective teachers in all schools seem to be trying to do something about the comic book and trash-magazine problem.

Despite the increased emphasis in newspapers, magazines, books, motion pictures, and television on the transmission of ideas and meaning by pictorial and graphic means, reports on this questionnaire suggest that students are not being given much instruction in interpreting or reading pictures, sketches, cartoons, and other graphic material. For rapid learners, ranks averaging 24 were given by schools to this item. Their means averaged 1.04 as compared with 1.02 for slow learners.

One of the few undesirable practices included in the questionnaire was the item: "Require memorization of specified number of lines of poetry and drama." This was given a low rank for rapid and slow learners by all types and sizes of high school. Means for slow learners were considerably lower, however, than for rapid learners, extending as low as 0.46 in large schools.

At the lowest end of the scale for rapid learners was a procedure which was given a median placement for extremely effective teachers of slow

learners. This item pertained to the use of simplified or abridged editions of classics and other famous literature. All types of schools gave this item a placement of 30 for rapid learners. Obviously, where reading instruction of bright children had been good in earlier grades there would be little need to use simplified or abridged editions with such pupils in high-school English classes. Large high schools seem to be making more general use of simplified editions for slow learners than any other schools. However, the means showing the extent to which they are used by teachers considered extremely effective in teaching slow learners are not high, ranging from 0.98 to 1.23.

Language and Grammar (Communication Skills)

Eight items in part III-A of the questionnaire were concerned with the teaching of grammar, usage, oral communication, listening, and written composition. These are items numbered "2," "3," "10," "11," "14," "20," "22," and "25" on table 5 for rapid learners. Three other instructional practices which dealt with language as related to communication media will be considered later in this section.

The long-honored issue of minimum essentials is still in the foreground. For rapid learners junior high schools and small high schools (300-499) gave first rank to the practice of requiring "mastery of certain minimum essentials in grammar and usage." Other schools ranked the practice second. Means were very high, ranging from 1.72 to 1.84 for rapid learners. Means for slow learners were slightly lower for the minimum essentials practice, extending from 1.20 (large schools) to 1.56 (senior high schools). As there are many different referents for the term "minimum essentials," it is hazardous to make a judgment concerning this practice. However, it is worthwhile noting that large high schools seem to be much more liberal for slow learners in this requirement than schools of any other size or type.

Besides their insistence that pupils master "minimum essentials," teachers are also concerned with the problem of more advanced and refined usage—especially for rapid learners. For such pupils, all types and sizes of schools except senior high schools and those over 1,000 enrollment gave a rank of 3 to the item: "Teach niceties of expression, such as distinctions between *shall* and *will*, *between* and *among*, *go slow* and *go slowly*, *may* and *can*, *lent* and *loaned*, etc." Schools with enrollments of 1,000 or more placed this practice seventh in the list of 30 items, but with the fairly high mean of 1.59. Senior high schools gave it a rank of 18.5. As would be expected, this curriculum procedure was not so frequently followed by teachers of slow learners. Nevertheless, small schools placed the practice sixth with a mean of 1.27, and all other schools except senior high schools and large schools gave it a mean of 1.18 or higher. Large high schools again were most liberal in respect to the teaching of niceties of expression to slow learners; their mean was 0.99.

Also within the battle-scarred arena of grammar and usage was item 10 on table 5, "Conduct drills to eliminate the recurrent vulgarisms such as

Table 2.—Instructional problems and procedures in English, by type of organization and size of school

SLOW LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (735)		Junior high school (271)		Senior high school (130)		Regular high school (254)		300-400 (227)		500-600 (228)		1,000+ (165)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1		3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Conduct drills to eliminate recurrent vulgarisms, such as "I ain't," "can't hardly," "be don't," etc.	1.58	1	1.59	1	1.54	3.5	1.58	1	1.54	1	1.50	1	1.57	3
2	Help students to find good substitutes for inferior comic books and magazines.	1.50	2	1.51	3	1.50	1	1.47	3	1.43	3	1.53	2	1.52	2
3	Emphasize reading of modern literature related to student interests and needs.	1.44	3	1.27	5	1.54	3.5	1.45	2	1.35	5	1.49	3	1.45	5
4	Require mastery of certain minimum essentials in grammar and usage.	1.42	4	1.35	6	1.50	2	1.42	4	1.47	3	1.37	6	1.20	11
5	Assign printed materials with difficulty approximating individual reading apt.	1.28	5	1.48	3	1.40	5	1.24	10	1.13	11	1.44	4	1.05	1
6	Teach through pictures, charts, and other graphics.	1.27	6	1.45	4	1.24	8	1.29	7	1.25	7	1.20	5	1.50	4
7	Encourage extensive reading of good literature outside of class.	1.23	7	1.29	10	1.27	6.5	1.28	6	1.27	4	1.22	7	1.17	12
8	Provide experiences in contributing members of small group.	1.21	8	1.20	8.5	1.27	6.5	1.23	6	1.23	8	1.21	8	1.41	6
9	Encourage students to evaluate own progress.	1.20	9	1.20	8.5	1.22	9.5	1.20	9	1.20	9	1.20	9	1.25	7
10	Encourage work on individual projects related to student and class needs.	1.27	10	1.28	11	1.23	9.5	1.28	8	1.19	10	1.08	17.5	1.21	8
11	Teach through recordings, radio, and other audio aids.	1.25	11	1.21	7	1.21	11	1.17	12.5	1.13	12.5	1.20	10	1.20	9
12	Teach through of expression, such as distinctions between <i>shall</i> and <i>will</i> , between <i>among</i> and <i>between</i> , go slow and go slowly, map and compass, hat and lemons.	1.19	12	1.23	12	1.03	19	1.13	11.5	1.27	6	1.21	11.5	1.05	13
13	Teach grammar, composition, and literature together in units organized around ideas, themes, or centers of interest.	1.17	13	1.18	13	1.07	16	1.13	11.5	1.12	14	1.21	11.5	1.13	15
14	Allow students freedom in carrying out activities.	1.16	14	1.15	14	1.14	12.5	1.17	12.5	1.13	12.5	1.13	12.5	1.14	13.5
15	Provide experiences in responsible group leadership.	1.13	15	1.12	15	1.08	15	1.16	12	1.10	15	1.14	14	1.14	13.5
16	Use simplified and/or abridged editions of books like <i>A Tale of Two Cities</i> for students.	1.08	16	1.11	16	1.05	17	1.08	13.5	1.02	17	1.00	13.5	1.23	10
17	Provide extended experiences in evaluative listening.	1.04	17	1.05	15	1.03	18	1.03	13	1.02	16	1.05	13.5	1.05	19
18	Teach symbolic interpretation (reading) of pictures, sketches, cartoons, and other graphic material.	1.02	18	1.07	17	1.00	20.5	1.05	21	1.05	20	1.05	17.5	1.04	10.5
19	Provide extended experiences in evaluating newspapers and magazines for purpose, content, and value.	.97	19.5	.96	23	1.10	14	1.05	16	1.00	15.5	.98	20	.92	22.5
20	Teach principles of grammar and usage observed by "Canned" leaders in public libraries who attract large reading and listening audiences.	.97	19.5	.99	20	1.14	12.5	1.05	17	1.00	15.5	.96	21	.94	21

21	Allow students to choose and plan learning activities	94	21	94	19	1 00	20.5	92	22	57	22	57	22	90	19	1 04	16.5
22	Encourage students to note differences in language used by public speakers and writers	90	22	85	28	87	22	98	19.5	95	21	95	21	91	28	75	25
23	Provide extended experiences in selecting and evaluating movies.	88	23	87	21	84	28	90	28	82	22.5	82	22.5	86	22	80	24
24	Provide extended experiences in selecting and evaluating television programs. (Do not answer if television is not normally available in community.)																
25	Teach through trips to public library, museum, newspaper plant, and similar places.	75	24	79	25	63	28.5	73	28	60	20	60	20	82	24	85	20
26	Assist students in preparing talks and other oral presentations to be given outside of school.	74	25	82	24	63	28.5	67	28	62	20	62	20	80	25	82	22.5
27	Teach formal disputation of sentences.	69	26	55	29	51	24	70	24	70	25	70	25	72	28	48	27
28	Encourage participation in speech and writing contests.	68	27	62	28	64	28	76	27	62	28	62	28	67	28	44	28
29	Require memorization of specified number of lines of poetry or drama.	67	28	59	28	66	27	77	28.5	65	28	65	28	71	27	56	26
30	Conduct detailed, intensive study of chapters, such as Shakespeare's plays, <i>Julius Caesar</i> , <i>Hamlet</i> , <i>of the King</i> .	63	29	61	27	70	28.5	82	20	60	28	60	28	80	28.5	46	28
		57	30	60	20	70	28.5	77	24.5	68	27	68	27	80	28.5	25	30

1 Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

"I ain't," "can't hardly," "he don't," etc." Although this practice did not rank near the top for rapid learners, it did receive surprisingly high means indicating extent of use by outstanding teachers. Means extended from 1.39 (senior high schools) to 1.49 (junior high schools). That rapid learners in senior high school should still need drills to eliminate vulgarisms such as "I ain't" and "he don't" indicates either an appalling lack of effectiveness in methods used for language instruction or a failure to excuse rapid learners from repeating exercises involving usage which they have already mastered.

This instructional emphasis on elimination of vulgarisms is, naturally, much greater for slow than rapid learners. In fact for slow learners, it ranks first among junior, regular, small- and medium-sized high schools, with means of 1.59, 1.59, 1.54, and 1.60, respectively. Senior high schools gave the practice a mean of 1.54; large high schools, a mean of 1.57.

Whether English teachers are being realistic in the language skills which they attempt to teach to pupils today is difficult to determine. Some research, however, has indicated that teachers have not taught young people to speak and write as educated leaders in America do speak and write. Returns for item 20 (table 6 for slow learners), which refers to the teaching of principles of grammar and usage observed by educated leaders in public life, support the inference that language instruction is not geared to the needs of people living in the mid-20th century. Although replies showed that a considerable amount of attention is given to teaching rapid learners our language as it is used by educated leaders, the opposite was indicated for slow learners. For them the mean in junior high schools was only 0.89, and for large high schools only 0.84. Even less attention is being given to a related practice, "Encourage students to note differences in language used by public speakers and writers." However, again there was quite a wide difference between replies for rapid learners, with an average mean of 1.35, and slow learners, with one of 0.90. Senior high schools gave this practice a rank of 10 and a mean of 1.41 for rapid learners.

One of the most traditional, as well as controversial, practices in teaching English is formal diagraming. This method of teaching grammar, which is not supported by carefully controlled research, received low ranks and mean ratings for both groups of pupils. For rapid learners formal diagraming is used least by teachers considered extremely effective in senior high schools, where it ranks 27th, and in schools over 1,000 enrollment, where it is in 29th place. Mean scores are 0.87 and 0.85, respectively. Small schools (300-499 enrollment) gave this item a mean of 1.01; and junior high schools and medium-sized schools, 1.04. Mean scores on use of formal diagraming with slow learners are much lower, ranging from 0.44 (schools over 1,000 enrollment) to 0.82 (schools between 300-499 enrollment).

As is implied in the responses to many of the practices and procedures already reported, the extremely effective teachers in large high schools seem to be more liberal in methods and philosophy of instruction and to employ the results of research more often than the teachers in small schools.

Mass Media of Communication

Because of the extensive, pervasive, constant influence of newspapers, magazines, motion pictures, and television on the reading, listening, and communicative activities of youth—for good and bad—three of the items in the questionnaire on English were designed to determine the attention being given to these media by teachers considered outstanding. Results were not encouraging.

Among the methods and procedures listed for communication media, newspaper and magazine instruction is evidently receiving the most attention. However, even that is not great. For rapid learners, ranks of 17 to 21 and means of 1.19 to 1.30 were given to the item: "Provide extended experiences in evaluating newspapers and magazines for purpose, content, and values." For slow learners this procedure also received low ranks and low means: 0.83 (large schools), 0.86 (junior high schools), 0.98 (medium-sized schools), and 0.99 (small schools). The highest mean was 1.10 for senior high schools.

Instruction in motion-picture selection and evaluation also was placed low for both rapid and slow learners. Only one of the means for this item was above 0.99. These relatively low means seem to indicate that the large amount of professional literature written on the subject of motion-picture appreciation during the past 20 years has not greatly influenced classroom instruction about this medium, which has had a tremendous influence on the attitudes, interests, values, and even behavior of hundreds of thousands of American youth.

Because television is now competing for young people's leisure time, an item on selection and evaluation of television programs was included for schools in communities where television was normally available. The 510 schools answering this item indicated that their extremely effective teachers were doing little in the way of providing extended experiences for students in selecting and analyzing television programs. For rapid learners this procedure was placed 28th and 29th in "extent of use" by all schools except those enrolling 1,000 or more students. All means were below 0.99. Large schools gave a rank of 26 to the item on televising guidance. Their average mean of 0.98 suggests that at least some attention is being given to this new medium. Means for slow learners were lower—from 0.73 to 0.85. Perhaps television is of too recent origin for teachers to be aware of its possibilities in pupil learning, of its effect on student values, or of the school's responsibilities and opportunities in utilizing it for worthwhile cultural purposes.

Individual and Group Methods

Effective instruction of rapid and slow learners—in fact, of all pupils—must provide them experiences during which they work (1) as individuals and (2) as contributing members of a group or committee. Six items—6, 7, 8, 9, 12, and 23 (table 5)—dealt with methods through which English

teachers might utilize the different abilities, talents, interests, attitudes, skills, motives, and goals of pupils in making learning effective and worthwhile.

"Provide experiences in responsible group leadership" is a practice which would normally be employed more with rapid than slow learners. Responses to the questionnaire showed that extremely effective teachers of rapid learners in large schools emphasize this practice more than teachers in any other group of schools. The mean of 1.74 was very high. The lowest mean given for rapid learners on this item was 1.39 by small high schools. As would be expected, the ratings for slow learners on the group leadership procedure were much lower. The means ranged from 1.08 to 1.16, and the ranks from 13½ to 15. Thus, one may conclude that slow learners are receiving a fair amount of experience in group leadership, and rapid learners are engaging in many experiences of this type.

Indirectly related to leadership experience is the procedure of allowing students to choose and plan learning activities. Although the practice was used more with rapid than slow learners, in neither case were the mean scores nearly as high as for the practice of providing experiences in group leadership. As is shown in tables 5 and 6, large schools offer both rapid and slow pupils more freedom in this respect than do any other types of schools. Small schools are most conservative in permitting pupils to choose and plan their learning activities. However, all types of schools allow pupils more freedom in carrying out activities, as is indicated by responses to item 12 on table 5 and item 14 on table 6. For rapid learners, means ranged from 1.32 (small schools) to 1.50 (large schools); for slow learners, means extended from 1.13 (small schools) to 1.18 (medium-sized schools).

Another item which dealt with provisions for individual differences was: "Encourage work on individual projects related to student and class needs." This practice, which implies more guidance and control by the teacher than the methods just described, received high means and ranks for rapid learners, and in most cases fairly good means for slow learners. Again large schools seem to be using individualized instruction more than schools which are smaller in size.

Group experiences are considered important in teaching pupils. "Provide experiences as contributing members of small group" was given means of 1.35 (small schools) to 1.59 (large schools) for rapid learners, and means of 1.23 (small schools) to 1.41 (large schools) for slow learners. There is evidently slightly more opportunity given to rapid than slow learners for group work. Why this is true is not clear; however, teachers of rapid learners may feel that they can be trusted with more responsibility than other pupils. On the other hand, slow learners could certainly profit by this type of cooperative learning experience.

Teachers considered extremely efficient in instructing rapid and slow learners are evidently much more willing to allow pupils to evaluate their own progress than to select and plan their learning activities. "Encourage

students to evaluate own progress" was ranked eighth or ninth by most schools for both groups of pupils. Again, small schools were most conservative and large schools most liberal among the schools included in the sample.

One of the ways of organizing learning experiences so that individual interests, needs, and abilities of students may be utilized in teaching is the unit method of instruction. Although there are many types of unit organization in teaching English today, the one which is receiving the most support from educational psychologists and professors of education in English is the one described in item 13 on table 5: "Teach grammar, composition, and literature together in units organized around ideas, themes, or centers of interest." Teachers considered effective with rapid learners seem to be making use of this type of unit to a considerable degree. Means ranged from 1.24 (small schools) to 1.45 (medium-sized schools). Junior high schools had a mean of 1.43, and large schools, 1.44. The unit type of instruction is also fairly common for slow learners, as is shown by table 6.

Summary

Based on the returns to part III-A of the questionnaire, one may assume that English teachers considered by their superiors to be extremely effective in teaching rapid and slow learners employ the following provisions and procedures. Obviously, these teachers use other methods and provisions besides the 30 described in part III-A of the questionnaire.

The Teacher of the Rapid Learner

Successful teachers of the rapid learner are evidently firm believers in having their students do extensive reading of good literature outside of the classroom. These teachers are concerned with helping their students find worthwhile substitutes for comic books and improving the quality of reading which they do. Teachers know their students' reading interests and needs, and consider them in motivating reading of modern literature. If they are teaching above the junior high school, they also have their students do a considerable amount of intensive study of the traditional high-school classics. However, the major emphasis is on extensive reading of all types of literature. In the junior high school and large high school (1,000 and over) they are assigning reading materials which have a difficulty level within the students' reading capacity. To a slightly lesser extent, teachers in other schools are doing the same.

In the area of language and grammar, successful teachers of rapid learners are somewhat less liberal than in the field of reading and literature. They are still requiring the mastery of minimum essentials (and often each teacher or school has a different list of such requirements). Teachers of rapid learners are more actively engaged in teaching the niceties of expression than in teaching the principles of grammar and usage observed by educated leaders in public life. However, both procedures are emphasized. Rapid

learners are also encouraged to observe the differences in type and quality of language used by writers and public speakers. Formal diagramming of sentences is not emphasized. Senior high schools and large high schools make least use of this method.

Experiences in group leadership and work in individual projects related to pupil interest are provided frequently for rapid learners, especially by successful teachers in large high schools. Group work is also popular. Freedom is granted to students in carrying out activities and encouragement is given them to evaluate their progress toward instructional goals. Finally, learning experiences in grammar, composition, and literature are organized as units structured by significant ideas, themes, and centers of interest.

The Teacher of the Slow Learner

Effective English teachers of slow learners are greatly concerned with the comic-book problem—even in the senior and regular high schools. These teachers are trying to find and use reading materials which are related to students' interests and needs, and are within their range of comprehension. Extensive reading is encouraged much more than intensive study of classics. Where classics are taught, simplified and abridged versions are used to a considerable extent, especially in junior high schools and large high schools (1,000 and over).

Vulgar usage recurring in the language of slow learners is a primary concern of teachers, especially in the junior and regular high schools. These teachers are also endeavoring to have their slow learners master elements of grammar and usage considered to be minimum essentials. Teachers in small high schools and junior high schools are even spending time trying to teach niceties of expression which are not used by some educated leaders in America. Formal diagramming is taught to a very limited extent.

Considerable experience in group work of a socialized nature is provided for slow learners by teachers considered extremely effective. Some freedom is also given these pupils in group leadership, planning of work, and evaluating of progress. Slow learners are encouraged to work on individual projects in which they are interested. In all of these activities, however, they enjoy less freedom than rapid learners.

Social Studies

Introduction

Because courses in the social studies are commonly required, they enroll pupils with a wide range of individual differences both in interest and ability. The problem of meeting the needs of rapid and slow learners is further complicated by the fact that individual assignments, when made, must consider the fact that the desired teaching outcomes should in part grow out of group work. As library facilities have increased in the secondary school, more attention has been given to teaching pupils how to use a reference

library. Collateral reading in history and geography with some attention to current events has been supplemented by individual and group research around broad general topics or current problems.

Organization of instruction into large units, the use of community resources, and new topics of instruction like human relations have been other innovations in social studies teaching.

The attempt to encourage changes in behavior through instruction has encouraged more functional social studies programs. Radio and television guidance and instruction in how to read a newspaper are used to help pupils to gain a greater awareness of current issues, a more critical as well as a wider use of mass media, and an increased sensitivity to social problems. Teaching pupils to register, vote, and study the public issues during elections and helping them to locate and apply for jobs are sample laboratory experiences. Pupil-teacher planning, pupil-teacher evaluation, and the use of group process are other devices used to increase participation and improve the outcomes of group discussion.

The items in part III-B of the questionnaire were chosen to include both earlier practices and recent innovations in social-studies teaching. No effort has been made to label any practice good or bad nor has any attempt been made in advance to have a panel of judges decide which practices were better for slow learners and which practices worked better with rapid learners.

Teaching Rapid Learners

The 10 practices and provisions most commonly reported for teaching rapid learners can be grouped in 3 divisions:

1. Current events, guidance in newspaper reading, radio and television listening.
2. Individual research, including the use of standard references in a large library.
3. Critical thinking and the socialized recitation.

The 10 practices which are used least fall into 6 groups:

1. Preparation of radio and television programs, culminating activities generally, and participation in adult movements in the community.
2. Pupil-teacher planning and pupil evaluation of group work.
3. The use of several textbooks rather than a single text.
4. Individual studies related to personal interests in art, music, etc.
5. Experiences in studying intergroup or intercultural relations.
6. Two areas that may be the responsibility of departments outside the social studies field in many schools: making charts and graphs (mathematics) and helping pupils find and apply for jobs (guidance).

Table 7.—Instructional provisions and procedures in social studies, by type of organization and size of school

RAPID LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (515)		Junior high school (313)		Senior high school (109)		Regular high school (198)		300-400 (190)		500-999 (278)		1,000+ (141)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Use current events as an important part of class work.	1.85	1	1.88	1	1.81	2	1.84	1	1.86	1	1.84	1	1.86	1
2	Teach pupils to use the Jayman's references books: the dictionary, encyclopaedia, World Almanac.	1.73	2	1.75	2	1.73	4	1.69	3	1.68	4	1.75	2	1.75	3
3	Teach pupils how to register and vote; give experiences in studying party platforms and personal views of candidates.	1.71	3	1.67	5	1.82	1	1.72	2	1.73	2	1.71	4.5	1.70	5
4	Encourage pupils to engage in conversation in school and at home on current events, politics, government, and news of school and neighborhood.	1.70	4	1.72	3	1.73	4	1.68	4	1.71	3	1.72	3	1.65	6
5	Encourage pupils to use references in a large library.	1.67	5	1.70	4	1.71	6	1.61	5.5	1.58	7.5	1.71	4.5	1.76	2
6	Use critical thinking when the class is seeking a solution for a social problem.	1.64	6	1.62	7	1.72	4	1.64	5	1.61	5	1.63	6	1.72	4
7	Teach pupils how to read a newspaper. (Learning to distinguish between fact and opinion, recognizing the use of propaganda devices, etc.)	1.60	7	1.58	9.5	1.65	7	1.61	6.5	1.58	7.5	1.62	7	1.62	9
8	Use the socialized recitation to develop major ideas.	1.59	8	1.63	6	1.60	9	1.52	8.5	1.55	9.5	1.59	8.5	1.64	7.5
9	Assign individual research projects on selected topics.	1.57	9	1.60	8	1.60	9	1.52	8.5	1.55	9.5	1.59	8.5	1.64	7.5
10	Encourage pupils to select and plan to see and listen to radio, television programs, and movies of social significance.	1.56	10	1.57	11	1.60	9	1.50	10	1.58	6	1.55	10	1.55	11
11	Teach basic skills in reading and writing (including misreading) to build social-studies vocabulary and concepts.	1.52	11	1.58	9.5	1.49	12	1.43	12	1.43	12	1.53	11	1.62	10
12	Encourage and advise pupils to organize and operate student governments and manage extra-class activities.	1.51	12	1.64	13	1.47	13	1.49	11	1.49	11	1.52	12	1.52	12
13	Plan learning experiences in large units.	1.44	13	1.52	14	1.50	11	1.38	17.5	1.35	15	1.46	14	1.50	14
14	Encourage pupils to set up personal goals and to engage in self-evaluation to see progress.	1.42	14	1.53	12	1.35	15	1.20	18	1.36	13.5	1.49	13	1.39	16.5
15	Evaluate the work of the class in terms of changes in behavior toward better citizenship.	1.39	15	1.49	16	1.34	20	1.26	19.5	1.36	13.5	1.43	15	1.38	19.5
16	Assign biographies of recognized library mark of men and women who have made important contributions to civilization.	1.38	16.5	1.40	17	1.43	14	1.33	13	1.30	17.5	1.41	16	1.45	15
17	Utilize resources of the local community for study.	1.38	16.5	1.45	16	1.35	15	1.29	16	1.30	17.5	1.38	15	1.41	15
18	Encourage pupils to read classics of historical significance.	1.36	18	1.38	18.5	1.33	16	1.31	14	1.30	17.5	1.40	17	1.38	19.5
19	Use group process in which all pupils use information to find solutions for social problems.	1.31	19	1.33	21.5	1.35	18	1.26	19.5	1.28	20	1.35	19	1.35	22.5

20	Give pupils practice in reading all parts of news magazines (include medicine, music and art, science, as well as national and international news)	1.30	20	1.33	21.5	1.33	21	1.24	21.5	1.30	17.5	1.29	23	1.31	24
21	Provide experiences for pupils to examine prejudices and attitudes that are prevalent	1.28	21.5	1.34	26	1.30	15	1.25	17.5	1.18	23.5	1.30	21.5	1.30	19.5
22	Lead the class in an evaluation of how well a job carried out by the whole class has been done and how group work can be improved	1.28	21.5	1.38	19.5	1.19	26	1.13	23.5	1.19	23	1.31	20	1.35	22.5
23	Encourage pupils to make individual studies of the history of areas in which they have special interests--art, music, medicine, etc.	1.27	22.5	1.39	25	1.28	22.5	1.34	21.5	1.23	21	1.30	21.5	1.28	25
24	Use pupil-teacher planning in studying social problems	1.27	23.5	1.33	23	1.30	23	1.13	23.5	1.13	23.5	1.28	24.5	1.28	19.5
25	Use several textbooks for pupils of different ability rather than a single textbook	1.23	25	1.30	13	1.28	23.5	.93	20	1.03	26	1.28	24.5	1.33	19.5
26	Supervise the planning of enlightening activities by class to organize major ideas of a unit	1.13	26	1.30	24	1.15	27	1.01	28	1.04	25	1.26	28	1.28	26
27	Have pupils make charts and graphs based on statistics	1.10	27	1.18	27	1.10	28	1.02	27	.98	27.5	1.15	27	1.13	27
28	Encourage participation in local adult movements	1.04	28	.97	29	1.27	25	1.04	26	.98	27.5	1.02	29	1.16	28
29	Provide experiences to help pupils learn how to find and apply for jobs	1.01	29	1.02	28	.90	29	1.06	25	.96	29	1.04	23	1.06	29
30	Arrange for preparation and presentation of radio and television programs	.61	30	.56	30	.70	30	.59	30	.46	30	.68	30	.68	30

1: Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

Table 2.—Instructional procedures and procedures in social studies, by type of organization and size of school
SLOW LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (515) ¹		Junior high school (313)		Senior high school (109)		Regular high school (196)		200-400 (199)		500-999 (278)		1,000+ (141)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Use current events as an important part of classwork.	1.74	1	1.71	1	1.75	1	1.78	1	1.75	1	1.77	1	1.67	1
2	Teach pupils how to register and vote; give experiences in studying party platforms and personal views of candidates.	1.66	2	1.48	3	1.64	2	1.63	2	1.60	2	1.55	2	1.50	2
3	Encourage pupils to engage in conversation in school and at home on current events, politics, government, and news of school and neighborhood.	1.59	4	1.44	5	1.56	3	1.56	3	1.57	3	1.48	5	1.43	5
4	Teach pupils to use the learner's reference books: the dictionary, encyclopedia, World Almanac.	1.59	4	1.45	4	1.53	4	1.55	4	1.47	5	1.53	3.5	1.45	4
5	Teach basic skills in reading and writing (including newspapering) to build mental studies vocabulary and concepts.	1.59	4	1.56	2	1.47	7	1.43	6	1.40	6	1.53	3.5	1.60	2
6	Encourage pupils to select and plan to see and listen to radio, television programs, and movies of social significance.	1.43	6	1.39	6.5	1.50	6	1.45	5	1.50	4	1.43	6	1.33	7
7	Teach pupils how to read a newspaper. (Learning to distinguish between fact and opinion, recognizing the use of propaganda devices, etc.)	1.26	7.5	1.27	10.5	1.43	5	1.41	7	1.36	8	1.40	7	1.30	9
8	Use the combined method to develop major ideas.	1.36	7.5	1.35	9	1.43	5	1.37	8	1.37	7	1.36	8	1.37	6
9	Encourage pupils to set up personal goals and to engage in self-evaluation to see progress.	1.26	9	1.34	6	1.26	10.5	1.23	10	1.26	10	1.22	10	1.26	10
10	Encourage the work of the class in terms of changes in behavior beyond better citizenship.	1.21	10	1.39	6.5	1.35	10.5	1.30	11.5	1.27	9	1.23	9	1.22	8
11	Encourage pupils to see education in a large society.	1.25	11	1.35	12	1.27	9	1.25	9	1.23	11	1.23	11	1.24	11
12	Outline activities of the local community for study.	1.23	12	1.27	10.5	1.23	14	1.19	13	1.18	13	1.24	12	1.23	12
13	Plan learning experiences in large units.	1.16	13.5	1.21	14	1.08	16.5	1.13	15.5	1.17	14	1.14	14.5	1.20	13
14	Use critical thinking when the class is seeking a solution for a social problem.	1.15	14.5	1.10	16.5	1.21	13	1.20	11.5	1.22	12	1.12	15	1.15	15
15	Lead the class in an evaluation of how well a job carried out by the pupils has been done and how group work can be improved.	1.13	15	1.20	13	1.04	21.5	1.08	19.5	1.10	16	1.14	14.5	1.16	15
16	Encourage and advise pupils to organize and operate student government and engage in extra-curricular activities.	1.10	16	1.10	16.5	1.00	19	1.13	15.5	1.15	15	1.10	17	1.00	20
17	Use special techniques for pupils of different ability rather than a single method.	1.08	17.5	1.24	13	1.08	16.5	.93	23	.90	25	1.15	13	1.10	14
18	Provide experiences for pupils to examine prejudices and attitudes that are prevalent.	1.08	17.5	.99	20	1.19	13	1.15	14	1.03	20	1.06	16	1.14	17

19	19	1.04	21.6	1.13	17	1.02	20	1.04	19	1.10	19
20	21	1.02	23	1.04	22	.88	24	1.02	21	1.13	18
21	21	1.02	21.6	1.06	19.6	1.06	18	1.02	21	.88	23
22	21	1.02	15	1.10	18	1.02	20	1.02	21	1.00	21
23	21	1.02	15	1.10	18	1.02	20	1.02	21	1.00	21
24	23	1.00	19	1.02	20	1.02	20	.80	23	.82	25
25	24	.80	24	1.07	21	.87	22	.88	24	.88	23
26	25	.81	25	1.06	24	.84	23	.80	25	.86	23
27	26	.81	25	.85	20	.88	26	.80	26	.88	23
28	27	.83	27.5	.87	26	.88	26	.80	27	.87	23
29	28	.78	27.5	.84	27	.78	27	.74	28	.79	23
30	29	.70	29	.74	28	.75	28	.68	29	.68	23
	30	.58	37	.58	30	.51	30	.58	30	.58	20

1. Number of usable returns.

2. Items are arranged in rank order and do not conform to original numbering on the questionnaire.

Table 2.—Instructional problems and procedures in mathematics, by type of organization and size of school

RAPID LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (826)		Junior high school (209)		Senior high school (111)		Regular high school (216)		300-499 (211)		500-999 (277)		1,000+ (147)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Assist students in learning vocabulary and reading skills peculiar to mathematics	1.56	1	1.61	2	1.47	3	1.52	2	1.45	2	1.52	1	1.57	1
2	Emphasize the social uses of mathematics	1.51	2	1.58	1	1.29	9	1.36	4	1.46	1	1.54	2	1.54	2
3	Provide individual supervision and guidance during class	1.45	3	1.48	4	1.43	4	1.43	3	1.44	3	1.47	3	1.43	3
4	Encourage study of the applications of mathematics to science	1.44	4	1.54	3	1.55	1	1.54	1	1.43	4	1.43	4	1.50	4
5	Encourage student self-evaluation	1.40	5	1.51	2	1.31	8	1.30	7	1.43	5	1.40	5	1.50	5
6	Encourage able students to assist slower students	1.37	6	1.33	5	1.35	7	1.43	3	1.41	6	1.36	6	1.53	6
7	Assign the same homework to each student	1.37	6	1.34	6	1.46	3	1.37	6	1.36	7	1.39	7	1.53	7
8	Encourage each student to work at his own rate, but require the student to continue his work to the same topic as the other students	1.28	8	1.37	8	1.38	6	1.34	9	1.21	8	1.37	7	1.38	8
9	Require all students in a given class to do approximately the same amount and type of work for same mark	1.28	8	1.29	12.5	1.40	5	1.38	8	1.28	9	1.28	9	1.27	9
10	Encourage solution of mathematical problems from field of student's interests	1.19	10	1.24	11	1.20	11	1.20	11	1.15	11	1.19	10	1.23	11
11	Encourage each student to work at his own rate and to complete as many copies as his ability will permit	1.43	11	1.28	10	1.05	15	1.12	12	1.22	10	1.16	11	1.14	12
12	Assign similar drill problems	1.15	12	1.13	15.5	1.17	12	1.15	11	1.15	12	1.15	12	1.13	13
13	Make individual assignments based on student's ability	1.13	13	1.20	12.5	1.09	16	1.09	14	1.11	13	1.14	13	1.11	14
14	Encourage students to make aids to instruction for the classroom	1.11	14.5	1.23	11.5	1.21	10	1.08	16	1.05	15	1.10	14	1.11	15.5
15	Display student's work on bulletin board	1.11	14.5	1.28	9	1.06	20	1.00	18	1.00	18	1.14	13.5	1.20	12
16	Give the students experience in applying the principles of mathematical reasoning to social problems	1.07	16	1.12	17	1.03	19	1.08	15	1.04	16	1.08	16	1.11	16
17	Provide student experience in group work	1.06	17	1.14	14	1.07	17	1.00	18	1.07	14	1.06	15	1.07	15.5
18	Give individual assistance to pupils after school hours	1.03	18	1.04	20	1.12	13	1.00	20	1.06	19	1.07	17	1.06	18
19	Emphasize manual activities which illustrate mathematical principles	1.02	19	1.06	19	1.05	19	1.00	19	1.03	17	1.03	20	1.00	21
20	Encourage students to compete for awards given for superior achievement	1.01	20	1.05	23	1.08	14	1.16	10	1.01	21	1.04	19	1.10	17
21	Encourage students to make up problems by securing data from own interest or experiment	1.00	21	1.08	18	1.04	25	1.01	21	1.04	20	1.01	21	1.01	20
22	Provide students with experience in evaluating types of reasoning in newspaper and magazine articles	1.02	22	1.03	21.5	1.03	22	1.03	23	1.03	23	1.03	23	1.03	23
23	Plan class activities with students	1.01	23.5	1.03	21.5	1.03	24	1.03	24	1.03	24	1.03	24	1.03	24

24	Give students experience in group evaluation.	91	23.6	1.02	23	81	23	79	25	89	22.6	90	24	95	23
25	Encourage students to read simple stories about mathematics or famous mathematicians.	88	25	.96	25	94	21	88	22	83	25	89	25	98	24
26	Encourage students to make scrapbooks and prepare graphic materials showing uses of mathematics.	82	26	.96	24	85	26	70	26	71	27	87	26	91	25.6
27	Permit students to use class time for other subjects when mathematics assignment is completed.	87	27	.72	27	83	27	61	27	74	26	89	27	83	27
28	Provide field trips related to classwork.	41	28	.46	28	34	29	37	28	41	28	40	28	42	28
29	Provide a mathematics laboratory.	23	29	.31	29	30	30	24	29	26	29	22	29	37	30
30	Provide students with experiences in a Mathematics Club.	38	30	.22	30	35	28	28	30	20	30	24	30	39	30

1 Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

It is appropriate to raise a question concerning the relative importance of the practices most commonly reported and least commonly reported. It would seem that pupil-teacher planning and using several textbooks rather than a single text are procedures significant enough to warrant most use rather than least use.

Among the provisions and procedures for rapid learners the following are used more in junior high schools than in schools of the other types: Item 14, encourage pupils to set up personal goals and to engage in self-evaluation to see progress; item 15, evaluate the work of the class in terms of changes in behavior toward better citizenship; item 22, lead the class in an evaluation of how well a job carried out by the whole class has been done and how group work can be improved; item 25, use several textbooks for pupils of different ability rather than a single textbook; item 26, supervise the planning of culminating activities by class to organize major ideas of a unit. All these items appear to be of significance for any school and the question may be raised as to whether they are peculiarly appropriate for the junior high school.

A number of the provisions for rapid learners appear to be used more in schools of at least 1,000 enrollment than in the smaller schools. Among these provisions are item 21, provide experiences for pupils to examine prejudices and attitudes that are provincial; and item 25, use several textbooks for pupils of different ability rather than a single textbook.

Teaching Slow Learners

In the list of the 10 practices most frequently used with slow learners are 7 of the practices which appear on the list of the 10 most commonly used with rapid learners. It would seem that in general the same practices are used with both rapid and slow learners. The three practices which appear on the list for rapid learners and which do not appear frequently on the list for slow learners are: Teaching pupils to use references in a large library, using critical thinking, and the use of individual research projects. The three items appearing on the list of the first 10 for slow learners but which do not appear often on the list for rapid learners are: (1) Teaching basic skills in reading, writing, and mapreading; (2) encouraging pupils to set up personal goals; and (3) evaluating classwork in terms of changes in behavior toward better citizenship.

In the list of the 10 practices least used for slow learners are 6 of the 10 items which appeared on the list of items least used for rapid learners. The missing items are: Providing experiences for examining prejudices and attitudes that are provincial; evaluation by a class as to how well a job was done; use of several textbooks for pupils of different abilities; and experiences to help pupils find and apply for jobs. These four items are ranked from 15 to 20 on the list of practices used for slow learners, while they are ranked from 21 to 29 on the list of practices used for rapid learners.

The fact that many of the same practices are used with rapid and slow

learners does not mean that teachers are neglecting provisions for individual differences. The objectives of the social studies are the same for all pupils. The same ends must be reached. Many teachers apparently use at least some of the same methods with both rapid and slow learners.

Among the provisions and procedures for slow learners, some of those which seem to be used more in junior high schools than in the regular and senior high schools are: item 10, evaluate the work of the class in terms of changes in behavior toward better citizenship; item 15, lead the class in an evaluation of how well a job carried out by the whole class has been done and how group work can be improved; item 17, use several textbooks for pupils of different ability rather than a single textbook. Here again the question may be raised concerning the peculiar appropriateness of these procedures for the junior high school.

Procedures which appear to be used less in junior high schools than in regular and senior high schools are: item 7, teach pupils how to read a newspaper; item 14, use critical thinking when the class is seeking a solution for a social problem; and item 18, provide experiences for pupils to examine prejudices and attitudes that are provincial.

Among the procedures for slow learners which appear to be used more in schools enrolling as many as 1,000 pupils, than in smaller categories, are item 5, teach basic skills in reading and writing (including mapreading) to build social studies vocabulary and concepts, and item 17, use several textbooks for pupils of different ability rather than a single textbook. Used more in smaller schools than in schools in the largest size category are item 6, encourage pupils to select and plan to see and listen to radio and television programs and movies of social significance, and item 23, give pupils practice in reading all parts of news magazines.

Comparison for Rapid and Slow Learners

The most striking comparison in the report on the use of the 30 practices listed is found in the means of the items for rapid and slow learners. The range of means for rapid learners is from 0.61 to 1.85; for slow learners, the range is from 0.33 to 1.74. However, the means for 29 of the 30 items are higher for rapid than for slow learners. There are differences of more than 0.4 in the means of the items, encourage pupils to use references in a large library and use critical thinking when the class is seeking a solution for a social problem. Only in the item, provide experiences to help pupils learn how to find and apply for jobs, is the mean for slow learners higher—1.02 for slow, 1.01 for rapid. In each of the remaining 29 items the mean for rapid learners is higher than the mean for slow learners.

General Summary

1. The 30 practices listed in the questionnaire seem to be generally used by the schools with enrollments exceeding 300. Twenty-nine of the 30 items have an average mean of more than 1.00 for rapid

learners indicating some use of the practices, while 12 items have a mean of more than 1.50 indicating much use of the practices. For slow learners 23 items have a mean of 1.00 or more, while 5 items have a mean of 1.50 or more.

2. The 30 practices are more frequently used with rapid learners than with slow learners.
3. While practices are reported with some differences in frequencies by high schools in different categories, it is difficult to generalize about the procedures in relation to the type of school organization or the size of school.

Mathematics

This section is based on complete and usable returns from 635 schools which enrolled 335,510 pupils in mathematics. This enrollment is equal to approximately 7 percent of all the pupils enrolled in mathematics in grades 7 to 12 in the United States in 1953. There were 3,388 teachers of mathematics in these schools, which is approximately 5.2 percent of the number in the United States. Of the 11,527 mathematics classes, 1.1 percent contained fewer than 10 pupils; 8.8 percent enrolled 10-19 pupils; 38.9 percent, 20-29 pupils; 47.9 percent contained 30-39 pupils and 3.3 percent had more than 40 pupils. Thus in the schools in this study, more than half of the classes in mathematics had more than 30 pupils.

Multi-track Program

In 209 (45 percent) of the schools in this survey, an attempt to provide for individual differences was made by a two-track plan in mathematics in the ninth grade. Sixty-two percent of the schools that had a two-track program confined it to the ninth-grade pupils. The two-track plan for the ninth grade usually consisted of algebra for the college-bound pupils and general mathematics for the other pupils. The content of the course in general mathematics is a correlation of elementary concepts of algebra, informal geometry, and arithmetic. In many cases the fundamental processes of arithmetic with elementary social applications assume the major role. The two-track plan was used in grades 10, 11, and 12 by 14 percent, 8 percent, and 9 percent of the schools for these respective grades. The offerings in these grades usually were the traditional mathematics courses and a selection of alternate courses such as consumer mathematics, applied mathematics, and remedial mathematics. Only in a few cases is correlated mathematics offered in the upper years of the high school.

A three-track program—algebra, general mathematics, and arithmetic—was provided in the ninth grade for 12 percent of the schools. Four percent of the schools provided a three-track plan for grades 10 to 12. Two schools stated that they offered a four-track program in mathematics for

the full 4 years of the high school. The offering of alternate courses or multitracks in secondary-school mathematics indicates some of the attempts schools are making to provide for the individual differences in pupils.

Individualized Instruction

Providing individual supervision and guidance during the class period is one of the most common provisions for individual differences according to this survey. There was little difference in extent of use of this procedure, whether it was with a class of slow learners or rapid learners or whether it was in a large school or a small school (item 3, table 9, and item 1, table 10). The emphasis on individual instruction is reflected in the use of individual assignments based on the student's ability (item 13, table 9). This method ranked fifth for the teachers of slow learners in the junior high school, but only about middle among the techniques used by the teachers of the rapid learners.

Both of these procedures on individual instruction were used to a greater extent by the teachers in the junior high school than those in the senior high school. Since the classes in the junior high school are larger than in the senior high school, one might expect the opposite to be true.

Two different types of individual study have been suggested in the literature. One method is to encourage the pupil to work at his own rate on individual assignments under the direction of the teacher. These assignments are on the same topic that is being studied by the other members of the class. The desired result is greater understanding of the topic being studied. For example, if the unit being studied is the linear equation of the form $y = mx + b$, the pupil might study more complicated equations of this form and their applications; but he would not study second-degree equations. Another procedure emphasizes the pupil's acceleration through learning about more topics than other members of the class. The pupil is encouraged to work at his own rate and complete as many assigned units as possible. The unit he is studying may not be the unit that is being studied by other members of the class. In fact, the rapid learner may complete many more units than the slow learner under such a procedure. For example, if the unit being studied by the class is the linear equation of the form $y = mx + b$, the pupil would be encouraged to complete as rapidly as possible the assignment which is the same for all pupils and then proceed with the next unit. The pupil may be solving equations of the second degree while other members of the same class are struggling with simple linear equations.

Both techniques for providing for the individual differences of pupils are designed to enrich the experience of the pupil, the first through greater understanding of a particular topic and the second through the knowledge of additional topics.

This study indicates that the first method is used more frequently than the second by effective teachers of both the rapid and slow learner. The first procedure, "Encourage each student to work at his own rate but require the

Table 10.—Instructional practices and procedures in mathematics, by type of organization and size of school
SLOW LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (635)		Junior high school (209)		Senior high school (111)		Regular high school (215)		300-499 (211)		500-999 (277)		1,000+ (147)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
2	1	1.70	1	1.75	1	1.70	1	1.64	1	1.69	1	1.69	2	1.75	1
3	2	1.66	2	1.72	2	1.59	2	1.62	2	1.60	2	1.70	1	1.67	3
4	3	1.62	3	1.62	3	1.63	2	1.61	3	1.53	3	1.65	3	1.69	2
5	4	1.46	4	1.54	4	1.34	5	1.40	4	1.44	4	1.43	4	1.54	4
6	5	1.37	5	1.36	5	1.33	6	1.25	6	1.23	5	1.27	5.5	1.26	7
7	6	1.26	6	1.29	7	1.23	6.5	1.19	7.5	1.23	7	1.27	6.5	1.28	6
8	7	1.25	7	1.32	6	1.14	8	1.19	7.5	1.26	6	1.21	9	1.29	5
9	8	1.21	8	1.34	5	1.08	12	1.09	9	1.15	9.5	1.24	7.5	1.24	8
10	9	1.20	9	1.08	14	1.41	4	1.23	5	1.18	8	1.24	7.5	1.17	9
11	10	1.16	10	1.24	9	1.09	11	1.08	11	1.15	9.5	1.20	10	1.09	13.5
12	11	1.10	11	1.16	12	1.03	13.5	1.03	11	1.10	12	1.10	11	1.12	10
13	12	1.09	12	1.17	11	1.03	13.5	1.01	14	1.12	11	1.06	14	1.11	11
14	13	1.06	13	1.10	13	1.00	15	1.05	13	1.02	14	1.07	13	1.10	12
15	14	1.08	14	1.18	10	.88	17.5	.89	15	.91	16	1.08	12	1.09	13.5
16	15	1.02	15	.93	16.5	1.13	9	1.08	11	1.04	13	1.04	15	.94	16.5
17	16	1.00	16	1.07	15	.94	16	.93	16	.99	13	1.01	16	.96	15
18	17	.88	17.5	.72	24	1.12	10	1.00	15	.89	17	.94	17.5	.78	21
19	18	.88	17.5	.88	19	.96	19	.91	17	.85	19	.94	17.5	.83	19
20	19	.85	19	.80	18	.89	17.5	.76	19	.82	20.5	.86	19	.89	18
21	20	.83	20	.93	16.5	.94	25	.75	20	.86	18	.80	21	.81	20
22	21	.79	21	.95	15.5	.73	20	.72	23	.65	24	.81	20	.84	16.5
23	22	.78	22	.86	20.5	.69	22	.70	23	.82	20.5	.74	23	.77	22
24	23	.73	23	.75	23	.66	24	.73	21	.72	22	.73	24	.73	23

24	Provide students with experiences in evaluating types of reasoning in newspaper and magazine articles.....	.73	24	.78	22	.69	22	.66	24	.68	23	.75	23	.71	24
25	Encourage students to read simple stories about mathematics or famous mathematicians.....	.63	25	.58	25	.69	23	.63	25	.69	25	.63	25	.63	25
26	Encourage students to compete for awards given for superior scholarship.....	.41	26.5	.40	25	.39	26	.44	26	.41	27	.43	27	.41	26
27	Permit students to use class time for other subjects when mathematics assignment is completed.....	.41	26.5	.44	26	.38	27	.42	27	.43	26	.43	26	.39	27.5
28	Provide field trips related to classwork.....	.39	28	.43	27	.34	28	.31	28	.36	28	.36	28	.39	27.5
29	Provide a mathematics laboratory.....	.38	29	.28	29	.24	29	.30	29	.28	29	.28	29	.31	29
30	Provide students with experiences in a Mathematics Club.....	.13	30	.12	30	.17	30	.16	30	.14	30	.11	30	.30	30

1. Number of usable returns.

2. Items are arranged in rank order and do not conform to original numbering on the questionnaire.

student to confine his work to the same topic as the other students" (item 8, table 9), was ranked sixth in extent of use by effective teachers of the slow learner. It was used to about the same extent with rapid learners.

The procedure, "Encourage each student to work at his own rate and to complete as many topics as his ability will permit" (item 11, table 9), ranked 10th as a method for slow learners. It was used to approximately the same extent whether it was with the rapid learner or slow learner, or among the pupils in the junior high school or senior high school.

Group Work as a Method of Instruction

In contrast to individualized methods of instruction are the group methods. Many leaders in education have suggested the instruction of small groups of pupils with similar interests and ability within a class as one of the more desirable methods of providing for the maximum educational development of pupils with wide ranges of abilities.

The responses to "Provide students with group work" (item 17, table 9) indicate that it ranked in the middle as a method used by effective teachers of both rapid learners and slow learners. It was used only slightly more in the junior high school than the other types of schools.

Other items such as "Give students experience in group evaluation" (item 24, table 9) and "Plan class activities with students" (item 23, table 9) indicate that, in the opinion of the heads of the departments, planned group work is not being used to a large extent by teachers in providing for the individual differences of their pupils. However, the reports of teachers who are skilled in getting small groups of pupils of similar interests within their classes to work on meaningful activities suggest that it is a desirable procedure.

Some teachers have given the rapid learners an opportunity for special development through mathematics clubs. Programs and suggestions for mathematics clubs have appeared in *The Mathematics Teacher*; however, mathematics clubs (item 30, tables 9 and 10) were seldom used by these teachers in providing for the rapid and slow learners. Of the 30 items in this study, it was used least.

The Laboratory Approach

In recent years articles on mathematics education have advocated that in learning mathematics the pupil should progress from the concrete to the semiconcrete and from the semiconcrete to the abstract. This implies manual activities for many pupils before they can arrive at an abstract mathematical concept. It suggests an experimental laboratory approach to mathematics which is an inductive approach to a deductive science.

According to this study, the teachers do not "Emphasize manual activities which illustrate mathematical principles" (item 19, table 9) to any great extent. The item "Encourage students to make aids to instruction for the classroom" (item 14, table 9) ranked in the middle of the items on the

survey as a method used with the rapid learner. It was used less frequently with the slow learner.

When the laboratory approach is used, some schools provide one laboratory that can be used by several mathematics classes. Some writers on mathematics education have advocated that *each* mathematics classroom should be a laboratory. This study reveals that few pupils have use of a mathematics laboratory (item 29, table 9). A mathematics laboratory as a way of providing for either the slow or rapid learner ranked next to the lowest of the 30 techniques listed in the study. An attempt to "Encourage students to make up problems by securing data from their own reading or experiment" (item 21, table 9) was not frequent with either teachers of rapid pupils or teachers of slow pupils. This type of activity requires guidance of a high type; however, collecting and analyzing data leading to a generalization is fundamental in an understanding of the scientific method.

Motivation

Falling in the middle group, according to the extent used, was the display of the student's work on the bulletin board (item 15, table 9). This technique was used for both the rapid and slow learner. Its use was slightly more in the large junior high schools than the other types and sizes of schools. Awards for superior scholarship (item 20, table 9) were used to some extent to motivate the rapid learner.

Emphasis on Social Uses of Mathematics

"Emphasize the social uses of mathematics" (item 2, table 9) ranked second in use with effective teachers of rapid learners and fourth place with effective teachers of slow learners. This emphasis was much greater in the junior high school than the senior high school. It may be that some of the social applications of mathematics that are now given in the junior high school should be presented to the pupils in the senior high school. The mathematics of budgeting, building a home, and tax returns may be more meaningful to the senior-high-school pupil who is planning to work and establish a home than to the youthful junior-high-school pupil. Perhaps the assumption that it is desirable to teach all the required mathematics for general education in grades 1 to 9 should be examined.

Scientific Uses

Applications of mathematics to science were emphasized especially by the teachers of the rapid learners in the regular and senior high school. The teachers of both rapid and slow learners "Encourage the solution of mathematical problems from the field of the student's interests" (item 10, table 9, and item 13, table 10). However, few field trips were provided for these pupils.

Application of Mathematics to Nonmathematical Situations

In mathematics, especially plane geometry, an understanding of mathematical reasoning is one of the important objectives. If this method of logical deduction is to be used in the daily activities of the pupil, the nature of learning suggests that the mathematical reasoning should be applied to social situations. For example,¹ in 1938 Dr. Harold Fawcett reported specific ways of teaching the nature of deductive proof in social settings and showed transfer of geometric reasoning to nonmathematical situations. In this study the items, "Give the students experiences in applying the principles of mathematical reasoning to social problems" (item 16, table 9) and "Provide students with experiences in evaluating types of reasoning in newspaper and magazine articles" (item 22, table 9), were not used by the teachers to a great extent. Geometry, which lends itself readily to these procedures, is taught in the senior-high-school grades, but the teachers of the senior high school used these procedures less than the teachers in the junior high school.

Vocabulary Study

One item that ranked high in the list of procedures used in providing for individual differences is "Assist students in learning vocabulary and reading skills peculiar to mathematics" (item 1, table 9). This item ranked first in the procedures used with the rapid learner and third for the slow learner. This indicates that these effective teachers of rapid learners and slow learners realize that, in the study of mathematical concepts, new words are introduced and familiar words take on special meanings. These teachers were making a special effort to teach this vocabulary. Definitions, except in formal geometry, become an outgrowth of classwork and not the basis for it.

Drill

Many of the assignments for the slow learner seem to be "simple drill problems." They ranked second for the slow learner and above the average for the rapid learner. The teachers used the procedure, "Assign simple drill problems" (item 2, table 10), with the slow learner in the junior high school more than in the senior high school, but in the senior high school the method ranked third in extent of use. This survey indicates that, in the opinion of the heads of the departments of mathematics, drill ranks as one of the top procedures used by effective teachers in providing for individual differences. Perhaps this emphasis on drill might raise questions concerning its importance and place in mathematics education. Will drill result in understanding or should understanding be the basis for drill? Will drill without understanding develop undesirable attitudes and prevent effective learning? Do understandings as well as manual skills require repetition in order to be retained?

¹ Fawcett, Harold. *The Nature of Proof*. 15th Yearbook of the National Council of Teachers of Mathematics, 1901 Sixteenth Street NW., Washington 6, D. C.

Summary

The data from the mathematics section of the questionnaire indicate that teachers are attempting to provide for individual differences in many ways. Some of these methods are very time consuming and may be ineffective with large classes. For example, individualizing instruction does not lend itself effectively to large classes. Yet "Provide individual supervision and guidance during class" (item 3, table 9) was rated high among the procedures used by effective teachers of rapid learners or slow learners. Several items reflected an emphasis on drill, and little emphasis on an inductive approach to mathematics. The assignment of "simple drill problems" (item 12, table 9) was second in extent of use with slow learners, while a mathematics laboratory was little used in providing for either the rapid learner or slow learner.

This study shows that many teachers are making a special effort to teach the vocabulary of mathematics. The wordlists in new textbooks, courses of study, and visits in the classroom also support this conclusion.

Effective mathematics education must begin with the pupil's present knowledge. This means that the pupil, even in the senior high school, may need concrete or semiconcrete experiences in mathematics before he can make abstract generalizations. Some teachers are giving pupils these experiences by encouraging them to gather data through physical experiments or through surveys of their local community. Through an inductive approach the meaning of a mathematical operation is developed.

"Emphasize the social uses of mathematics" (item 2, table 9) ranked high as a method with the effective teachers of the rapid learner and the slow learner. Uses of mathematics in science (item 4, table 9) were also emphasized. However, few field trips were provided to make these applications more meaningful. "Give the students experiences in applying the principles of mathematical reasoning to social problems" (item 16, table 9) and "Provide students with experiences in evaluating types of reasoning in newspaper and magazine articles" (item 22, table 9) were not used to a great extent. "Experiences in group work" (item 17, table 9) was a device that was used by some teachers in providing for the individual differences in their pupils. However, individual work was used more than group work, and student self-evaluation was encouraged more than group evaluation. It may be that the teachers who are successful with group techniques provide the pupils with experiences that both develop their various mathematical abilities and lay the foundation for intelligent participation in adult society. Perhaps many more teachers will explore the possibility of using small-group procedures now that some teachers have blazed the trail.

Science

Introduction

This section is a report on the frequency and extent of use of 30 techniques, provisions, and procedures by teachers considered to be extremely

Table 11.—Instructional provisions and procedures in science, by type of organization and size of school

Item No.	Item	Type of organization										Enrollment			
		All schools (673) ¹		Junior high school (238)		Senior high school (136)		Regular high school (280)		200-450 (227)		500-999 (200)		1,000+ (151)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Index that students report science experiments honestly and accurately	1.80	1	1.74	1	1.68	1	1.85	1	1.79	1	1.81	1	1.84	1
2	Encourage students to use scientific encyclopedias and references in preparing science reports	1.89	2	1.68	3.5	1.63	3	1.55	3.5	1.51	4.5	1.64	2	1.60	4
3	Include student activities to stress basic skills, such as reading tables, observing experiments, and spelling common science words	1.86	2.5	1.65	2	1.55	2	1.48	5	1.50	6	1.62	3	1.63	2.5
4	Guide students to note superstitions and other biases that block fair consideration of scientific evidence	1.86	2.5	1.63	3.5	1.51	4	1.54	4	1.53	3	1.57	4	1.62	2.5
5	Give students experiences in helping with science demonstrations	1.82	5	1.52	7	1.48	5	1.55	2.5	1.52	3	1.53	5	1.50	6.5
6	Help students understand scientific reasons for fire-safety rules, sanitary standards, and/or first-aid practices	1.49	6	1.57	5	1.46	7	1.37	8	1.51	4.5	1.45	8	1.52	5
7	Discuss with students the qualities that help a person hold a job in industry	1.44	7	1.40	10	1.47	6	1.42	6	1.37	9.5	1.45	7	1.41	10.5
8	Encourage students to read stories about famous scientists	1.43	8	1.53	6	1.54	11	1.23	10	1.36	8	1.48	6	1.41	10.5
9	Teach students to read and evaluate science materials from newspapers	1.42	9	1.48	8	1.36	9	1.34	9	1.37	8.5	1.40	9	1.46	8
10	Guide students to evaluate science notebook work against appropriate standards	1.40	10	1.39	11	1.44	8	1.40	7	1.41	7	1.31	10.5	1.50	6.5
11	Stimulate students to plan and carry on projects of the experimental research type	1.31	11.5	1.30	12	1.37	10	1.29	11	1.35	11	1.31	10.5	1.34	12
12	Encourage students to collect clippings on the uses made of science in everyday life	1.31	11.5	1.47	9	1.08	16	1.19	14	1.25	12	1.29	12	1.44	9
13	Arrange for students to become assistants for class, laboratory, and/or science club work	1.21	13	1.15	15	1.29	12.5	1.22	12	1.13	13.5	1.23	13.5	1.29	13
14	Encourage students to engage in recreational reading of science fiction	1.17	14	1.20	13	1.08	16	1.08	17	1.12	13.5	1.23	13.5	1.12	14
15	Help students to understand how tools, such as the hammer, pliers, drill, and screwdriver, operate	1.13	15	1.17	16	1.05	16	1.13	15	1.09	16	1.20	15	1.11	15
16	Anticommunist and conduct discussion of radio, television, and movie presentations of scientific events	1.11	16	1.23	14	1.01	19	1.00	19	1.05	17	1.10	16	1.09	16
17	Help students to analyze science information in statistical form	1.05	17	1.05	18	1.13	14	1.04	18	1.08	16	1.04	17.5	1.01	18
18	Help pupils participate in pupil-teacher planning to discover real problems for study in science	1.03	18	1.12	17	.95	20.5	.94	22	1.03	18	1.04	17.5	1.04	17

19	Instruct students to repair simple home appliances, such as toasters, extension cords, and lamps	.06	19	.08	19	.06	19	1.08	19.5	.91	21
20	Guide students to know the values of foreign languages for work in the sciences	.06	20	.57	22	.57	22	1.08	19.5	.90	22.5
21	Encourage students to participate in adult activities, such as providing information about a sewage-disposal system	.91	21	.96	20	.91	23	.92	21	.86	24
22	Arrange for students to try competitive science examinations and aptitude tests	.80	22	.51	26	1.28	12.5	.86	23.5	.96	19
23	Encourage students to study the sciences that underlies proficiency in such special interests as music, art, and history	.86	23	.94	23	.83	24	.88	23.5	.87	25
24	Use contracts and other methods that provide for learning activities at different levels	.85	24.5	.90	21	.70	27.5	.87	25	.90	22.5
25	Help students to visit establishments where scientific products are made and/or used	.85	24.5	.79	25	.89	22	.90	22	.86	26
26	Help students to participate in local science fairs and congresses	.79	25	.74	26	.94	26	.83	26	.86	26
27	Makes use of pictures and maps in teaching science	.78	27	.81	24	.85	20	.79	27	.82	27
28	Expect students to make written reports on scientific happenings for the school paper	.86	26	.53	27	.53	30	.56	28.5	.87	29
29	Arrange for doctors, nurses, engineers, and others to meet with science classes	.55	29	.46	29	.70	27.5	.56	28.5	.86	30
30	Arrange for students to attend meetings of science teachers and scientists	.80	30	.35	30	.78	26	.57	30	.62	28

1 Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

effective in teaching science to rapid and slow learners. The development of the questionnaire and the scope of the sample are described on pages 3-5. The number of usable reports in science was 678.

Frequently Used Procedures

In their instruction, teachers of both rapid and slow learners place great importance on accurate reporting of science experiments by pupils, on reading and other basic skills related to science, on ways of helping students to note superstitions and biases that lead to unscientific thinking and on qualities that lead to job success in industry. As shown in table 11, teachers of rapid learners also encourage them to use scientific encyclopedias and references and to read and evaluate science materials in newspapers.

Individualizing Instruction

The extent of use that science teachers make of contracts and other methods that provide for learning activities at different levels may be noted by examining item 24 on table 11 (Rapid Learners) and item 18, table 12 (Slow Learners).

This procedure ranks in the lower half of the items among the selected science teachers serving slow learners. It ranks among the lowest third of the items for rapid learners. The practice of stimulating students to plan and carry on projects of the experimental research type is used much more with rapid learners (mean = 1.31) than slow learners (mean = 0.79). Science teachers in this study were not using these general individualized methods to any great extent. They seem to be caring for individual differences mainly through projects, special reports, extra reading, and by allowing students to help with science demonstrations. In their comments a number of science teachers reported that the large size of their classes, 35 and 40 students, prevented adequate differentiation of instruction. Some science teachers reported that their schools had college-preparatory science courses as well as applied science courses which provided for the adapting of instruction to individual pupils. In view of the wide differences in abilities, interests, study habits, career goals, and skills among pupils, it is doubted that these differences can be met adequately by assigning extra types of work. Skills and procedures are needed which will make individualized work a common and widespread practice.

Emphasis on Knowledge

As noted above, the practice of including "student activities to stress basic skills such as reading tables, observing experiments, and spelling common science words" occupies a high rank for both groups of science teachers in all types and sizes of high schools. "Arrange for students to try competitive science examinations and aptitude tests" is among the lowest 10 in rank for both overall groups of science teachers.

The items on helping students to analyze science information in statistical form and to realize the values of foreign languages for science are among the lowest 10 for slow learners. Naturally, these procedures are used more extensively with rapid learners, especially in senior high schools. Mean scores indicate that science teachers make some distinctions in activities employed at different levels and with students of different abilities.

Using Library Materials

"Encourage students to use scientific encyclopedias and references in preparing science reports" is a procedure frequently used with rapid learners. It was similarly used with slow learners only in high schools of 500-999 students. "Encourage students to read stories about famous scientists" ranked high for both groups, with a mean of 1.43 for rapid learners and 1.31 for slow learners. Junior-high-school science teachers are encouraging their science students to read about famous scientists to a larger extent than are science teachers at senior-high-school levels.

This study does reveal a commendable amount of use of library materials by pupils of the selected science teachers. One can hope that the materials used are well adapted to the reading ability of the students so that the use of library materials is an experience that will kindle and enlarge interests in library resources.

Use of Current Science

Items closely related to current science included the following: "Teach students to read and evaluate science materials from newspapers," "Expect students to make written reports on scientific events for the school paper," "Encourage students to collect clippings on the uses made of science in everyday life," and "Announce and conduct discussions of radio, television, and movie presentations of scientific events." Returns for these practices show that high-school science students are encouraged to study the flow of current scientific developments; but they are seldom encouraged to report on such events in written form. In view of the increasing number of worthwhile science programs offered by radio, television, and motion-picture producers, it is encouraging to note that teachers are devoting some attention to such programs.

Repairs and Work

Do science teachers of rapid learners and of slow learners give attention to repairs and work? These activities may be a means of doing things about the home or a means of earning a living. A partial answer to the question may be found by noting the intermediate ranks of the item "Instruct students to repair simple home appliances, such as toasters, extension cords, and lamps," and the high ranks of the item "Discuss with students the qualities that help a person hold a job in industry."

Table 12.—Instructional provisions and procedures in science, by type of organization and size of school
SLOW LEARNERS

Item No.	Item	Type of organization								Enrollment							
		All schools (678) ¹		Junior high school (285)		Senior high school (120)		Regular high school (226)		200-499 (227)		500-999 (200)		1,000+ (151)			
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank		
1	3	6	5	6	7	8	9	10	11	13	12	14	15	16			
1	Insist that students report science experiments honestly and accurately.	1.64	1	1.11	11.5	1.66	1	1.53	2	1.65	1	1.63	1	1.62	1		
2	Guide students to note superstitions and other biases that block fair consideration of scientific evidence.	1.50	2	1.40	3	1.45	2.5	1.54	1	1.50	2	1.50	2.5	1.51	2		
3	Include student activities to stress basic skills, such as reading tables, observing experiments, and spelling common science words.	1.47	3	1.52	1	1.45	2.5	1.42	2.5	1.48	2.5	1.50	2.5	1.41	5		
4	Help students understand scientific reasons for fire-safety rules, sanitary standards, and/or first-aid practices.	1.44	4	1.48	3	1.05	13	1.42	2.5	1.48	2.5	1.38	4.5	1.50	2		
5	Discuss with students the qualities that help a person hold a job in industry.	1.37	5	1.31	4	1.46	2	1.41	5	1.33	5	1.38	4.5	1.42	4		
6	Encourage students to read stories about famous scientists.	1.31	6	1.26	5	1.18	6	1.16	11	1.27	8	1.19	8	1.23	9		
7	Give students experiences in helping with science demonstrations.	1.23	7	1.24	7	1.13	8	1.20	8	1.22	6.5	1.19	8	1.26	8		
8	Encourage students to collect clippings on the uses made of science in everyday life.	1.19	8	1.21	8	.77	15	1.19	9	1.18	9	1.12	11	1.34	6		
9	Help students to understand how tools, such as the hammer, plane, drill, and screwdriver, operate.	1.15	9.5	1.14	9	1.23	5	1.21	6.5	1.13	12	1.24	6	1.14	11		
10	Guide students to evaluate science notebook work against appropriate standards.	1.18	9.5	1.30	5	1.15	8	1.21	6.5	1.22	6.5	1.09	13	1.27	7		
11	Teach students to read and evaluate science materials from newspapers.	1.15	11	1.12	10	1.15	8	1.18	10	1.17	10	1.11	12	1.17	10		
12	Encourage students to use scientific encyclopedias and references in preparing science reports.	1.13	12	1.04	13	1.00	10	1.12	13	1.16	11	1.16	10	.90	14		
13	Instruct students to repair simple home appliances, such as toasters, extension cords, and lamps.	1.01	13.5	.94	15	1.00	11	1.04	13	.91	15	1.19	8	.97	15		
14	Encourage students to engage in recreational reading of science fiction.	1.01	13.5	1.06	14	.94	13	.97	15	.97	15.5	1.02	15	1.03	13		
15	Announce and conduct discussion of radio, television, and movie presentations of scientific events.	1.00	14	1.11	11.5	.75	16	.99	14	.97	15.5	1.06	14	1.02	13		
16	Make use of pictures and maps in teaching science.	.83	16	.82	16	.87	20	.81	16	.78	18	.83	16	.91	16		
17	Stimulate students to plan and carry on projects of the experimental research type.	.79	17	.81	17	.70	19	.79	21	.94	16	.80	17	.68	20		
18	Use concepts and other methods that provide for learning activities at different levels.	.77	18	.76	18	.73	17.5	.81	19	.79	17	.75	19	.88	17		

19	Help students to visit establishments where scientific products are made and/or used.	75	19	71	21	81	14	81	19	69	21	79	13	76	21
20	Arrange for students to become assistants for club laboratory, and/or science club work.	72	21	74	19.5	72	17.5	71	23	73	19.5	69	20.5	77	19
21	Help students to analyze science information in statistical form.	72	21	54	24	60	24	65	24	67	22	55	24	54	25
22	Help pupils participate in pupil-teacher planning to discover real problems for study in science.	72	21	74	19.5	66	21	61	19	63	24	69	20.5	77	19
23	Encourage students to participate in adult activities such as providing information about a sewage disposal system.	71	23	68	23	65	23	63	17	73	19.5	67	23	75	22
24	Encourage students to study the science that underlies proficiency in such special interests as music, art, and history.	66	24	61	23	61	23	72	22	68	22	62	23	77	19
25	Help students to participate in local science fairs and congresses.	50	25.5	45	25	55	27	53	27	46	27	49	25	55	24
26	Arrange for doctors, nurses, engineers, and others to meet with science classes.	50	25.5	40	25	59	25	55	25	53	25	49	25.5	48	26
27	Guide students to know the values of foreign languages for work in the sciences.	48	27	39	27	55	25	55	25	50	25	45	25.5	43	27
28	Arrange for students to try competitive science examinations and aptitude tests.	37	28	38	28	49	26	44	28	41	26	39	28	39	28
29	Expect students to make written reports on scientific happenings for the school paper.	27	29	30	29	34	30	30	29	31	29	23	30	30	29
30	Arrange for students to attend meetings of science teachers and scientists.	24	30	16	30	38	29	25	30	17	30	24	30	31	29

¹Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

Pupil-Teacher Planning

Reports from selected science teachers reveal that those who work with rapid learners encourage some pupil-teacher planning (mean = 1.03), while those who work with slow learners do considerably less (mean = 0.72).

Many science teachers use pupil-teacher planning as a means of getting away from textbook teaching. They use it to find motives for studying science. Probably science studies would be more meaningful to slow learners if thoughtful pupil-teacher planning were used with increased frequency.

Leadership Activities

The extent of use for procedures that stress leadership may be noted from the item "Arrange for students to become assistants for class, laboratory, and/or science club work," and the item "Give students experiences in helping with science demonstrations."

Science teachers working with rapid learners as well as those working with slow learners make fairly extensive use of demonstration procedures. The involving of students as assistants was done quite extensively (mean = 1.22) by science teachers working with slow learners and very extensively (mean = 1.52) by science teachers working with rapid learners.

Both of the procedures referred to are types of teaching activities. Students who undertake such activities become in a real sense assistant teachers. Such involvement may be the means of interesting youth in science teaching as a career.

Meeting With Scientists

Much stress has been given in recent years to the idea that science teaching should help youth to understand scientists and scientific progress. Two items concerned with this idea were "Arrange for students to attend meetings of science teachers and scientists," and "Arrange for doctors, nurses, engineers, and others to meet with science classes."

Both of these procedures received very low ranks. These ranks are similar to that received for rapid learners by the item "Help students to visit establishments where scientific products are made and/or used." The low ranks for the items related to meeting scientists suggests that science teachers, especially science teachers working with rapid learners, should try to find procedures by which high-school students may come to know personally some scientists and engineers.

Experimenting and Reporting

The customary experimenting and reporting were sampled in the item "Insist that students report science experiments honestly and accurately," and the item "Guide students to evaluate science notebook work against appropriate standards." These procedures were rather extensively used as is shown by their relatively high ranks and means.

The less customary types of experimenting and reporting were sampled in the item "Stimulate students to plan and carry on projects of the experimental research type," and the item "Expect students to make written reports on scientific happenings for the school paper." These items received intermediate or low ranks.

Enjoying Science

The relation of science to recreation was sampled in at least three items: "Encourage students to engage in recreational reading of science fiction"; "Encourage students to study the science that underlies proficiency in such special interests as music, art, and history"; and "Make use of puzzles and magic in teaching science."

Recreational reading of science fiction was ranked 14th for both rapid and slow learners, with means of 1.17 and 1.01, respectively. Not much is being done to encourage the study of science closely related to music, art, and history. Puzzles and magic demonstrations are used more with slow than with rapid learners.

Procedures Suggested by Science Teachers

In addition to the replies to the 30 procedures listed in the questionnaire, science teachers reported other methods and procedures they use to teach rapid and slow learners. Many teachers make extensive use of films and other audiovisual aids. Some teachers reported that they give extra credit to stimulate students to engage in additional activities; that the laboratory is open after school for the better students who are encouraged to undertake investigations; that they help with student counseling after regular school hours; that they have installed and now operate a weather station; that they teach pupils through science-club work; that they provide special study outlines for rapid learners; and that students assist with building stage sets.

Moreover, some teachers use prepared self-help materials, especially with slow students, they stress careful taking of notes during lectures, and they use a double-grading scale. They provide a special course of study for slow learners, arrange special demonstrations for rapid learners, help students to perform science demonstrations in other schools, encourage committee and group work within science classes, carry on special makeup work for slow learners, and help the slow learners during study time while allowing the rapid learners to move ahead.

Also, teachers reported that special vocational information is made available to rapid learners, that classes are sectioned at the close of the first semester, that there is oral reading with slow learners, that there are advanced courses in physics, that the school has a "ham" radio club, that rapid learners help with television presentations, that there is a biology honor society which meets during the evening and holds students even after they finish biology, that the department chairman spends extra time with rapid learners, that

slow students take care of plants and animals in the classroom, that different levels of textbooks are used, that rapid students help to conduct the science class, that drawings are made of famous scientists, and that the school holds a vocational day when students meet with people in various vocations.

Summary

The main conclusion resulting from this study of provisions and procedures employed by science teachers considered to be extremely effective with slow learners and rapid learners is that these teachers use largely the same general provisions and procedures with both groups of pupils. However, science teachers of rapid learners use the provisions and procedures somewhat more extensively and in a few cases *much* more extensively.

The selected science teachers working with slow learners and the selected science teachers working with rapid learners may, based on the findings of this study, be described as teachers who help students understand scientific reasons for fire safety rules, sanitary standards, and/or first-aid practices; who include student activities which stress basic skills such as reading tables, observing experiments, and spelling common science words; who encourage students to use scientific encyclopedias and references in preparing science reports; who help students to understand how tools such as the hammer, plane, drill, and screwdriver operate; who teach students to read and evaluate science materials from newspapers; who encourage students to read stories about famous scientists; who discuss with students the qualities that help a person hold a job in industry; who encourage students to collect clippings on the uses made of science in everyday life; who guide students to note superstitions and other biases that block fair consideration of scientific evidence; who give students experiences in helping with science demonstrations; who insist that students report science experiments honestly and accurately; and who guide students to evaluate science notebook work against appropriate standards.

In addition to the above, the science teacher who is judged as especially effective in dealing with rapid learners arranges for students to become assistants for class, laboratory, and/or science-club work; stimulates students to plan and carry on projects of the experimental research type; helps students to analyze science information in statistical form; encourages students to engage in recreational reading of science fiction; helps pupils to participate in pupil-teacher planning to discover real problems for study in science; arranges for students to try competitive science examinations and aptitude tests; and announces and conducts discussions of radio, television, and movie presentations of scientific events.

In addition to using the practices listed above for both rapid and slow pupils, science teachers who were judged as especially effective with slow learners do the following: Instruct students to repair simple home appliances, such as toasters, extension cords, and lamps, and help students to

understand how tools, such as the hammer, plane, drill, and screwdriver, operate.

The frequent or infrequent use made of various procedures by the science teachers included in this study raises many questions about the effectiveness of instructional methods and materials for different purposes. This area offers a fruitful field for research. A problem which is as persistent and as important as effective procedures for the greatest possible educational development of slow learners and rapid learners deserves further study.

Home Economics

The 30 items in the home-economics section of the questionnaire were designed to include those provisions believed to be commonly applied by effective homemaking teachers. Data submitted by the 604 schools which made usable replies indicate that teachers are aware of many ways of meeting needs of individual pupils. The extent to which the same items are used for both slow and fast learners, however, suggests that more discriminating use of these techniques, provisions, and procedures might help teachers do a better job of meeting the differences found among pupils in home-making classes.

The following discussion of the returns on some items in the home-economics questionnaire points out some relationships concerned with the extent to which practices are used with fast and slow learners and in schools of varying sizes and types.

Provisions and Practices Used Most in Providing for Individual Differences

As is shown in table 13, the provision which ranked highest for rapid learners was "Encourage each pupil to do as much as his ability permits." This was true for all three types of schools—junior, regular (4-year), and senior high schools—and for every size of school from the smallest to the largest participating in the study. This item, with a mean score of 1.89, far outranked the provision which received the next highest mean score of 1.74. Homemaking teachers in the 604 schools replying to the questionnaire seem to be pretty thoroughly committed to this principle in all of their teaching, for this item ranked second as a procedure for use with slow learners (see table 14). Means were similar (ranging from 1.86 to 1.92 in schools of the various sizes and types) for both fast- and slow-learning pupils. The rank of 2 for slow learners resulted because of a higher score given to another practice—close supervision—with them.

Replies from the 604 reporting schools suggest that many of the same provisions are made for both rapid and slow learners. Seven of the ten top-ranking practices were rated among the first ten for both fast and slow groups. The three provisions ranking high for rapid learners but not for slow were: (1) Allow pupils to select projects of varying degrees of difficulty; (2) encourage pupils with creative ideas, interests, and talents to

develop them; and (3) provide for pupil participation in choosing and planning learning experiences. As shown in table 14, these items ranked 15th, 16th, and 17th among the 30 items for slow learners. It seems natural these provisions would be used more frequently with rapid learners, for in this group we would expect to find the pupils with the larger share of creative ideas and greater capacity for grasping experiences and making choices that increase independence. It might be well to consider, however, the loss to slow-learning pupils if they are not also given experiences which foster creativeness, independence, and participation to the maximum of their ability. The mean scores for these three items do *not* show neglect of these practices with slower groups. Means for them in every case were 1.4 or greater on the scale of 0-2. They do suggest that homemaking teachers tend to provide more opportunities for rapid learners to take initiative and accept responsibility.

The three practices which teachers ranked among the 10 items most frequently used with slow learners but which they placed farther down in the list of provisions for rapid learners were: (1) Encourage selection of simple projects that can be completed in a short period of time; (2) emphasize manipulative activities; and (3) provide opportunity to develop housekeeping skills through routine care of homemaking rooms. There was an appreciable difference in the means for fast and slow groups for the first two of these items. Means for the two groups on the item on routine care of homemaking departments were similar (1.47 for rapid, 1.52 for slow) though the item ranked 15th in use with rapid learners and 10th with slow. This suggests that all pupils share equally in doing routine housekeeping tasks in the departments surveyed, but that relatively more emphasis is given to this as a *learning* experience with slow pupils.

Provisions and Practices Used Least in Providing for Individual Differences

The 5 items, out of the total of 30, ranking lowest in order of extent of use in teaching rapid learners (table 13) were all specific provisions which might be made, rather than a general principle or a technique that might be applied in many ways in teaching. They were:

Provide pupils opportunity to investigate jobs open to professionally trained home economists.

Provide opportunity to interpret statistical and graphic data about homes and families.

Arrange field trips to homes, stores, factories, etc.

Encourage pupils to prepare articles about homemaking activities for school and local papers.

Provide opportunity for pupils to assist in making plans for and keeping department accounts.

Perhaps their specificity contributed to the low position they held on the list, for teachers are not apt to use a *specific* practice "much." Due to the system of weighing used with the replies, items answered "some"—even when the item was used in many schools to some extent—received lower mean scores than those which were checked "much" by many of the persons replying to the questionnaire. It is, for example, reasonable to expect that a teacher might check "Use as learning experiences home and family problems that are real to pupils" *much*. The same teacher might answer only *some* to an item like "Provide opportunity for pupils to assist in making plans for and keeping department accounts." The former was ranked 8th and the latter 30th for rapid learners.

The same five items were at the bottom of the list for slow learners. For neither fast nor slow learners were means for these items above 1.00, and on all except one the mean was lower for slow than for rapid learners. The exception was the item "Arrange field trips to home, stores, factories, etc.," which had means of 0.84 and 0.83 for the two groups. It would be expected that the means for rapid and slow learners would be the same on this particular item, for teachers usually arrange such experiences for an entire class rather than for a group within the class. The extent to which field trips were used as learning experiences for homemaking classes was definitely related to the size of the school. Means dropped from 0.92 in the smallest schools answering the questionnaire (300-499) to 0.74 in those with enrollment over 1,000. School type was also related to the extent to which field trips were used as learning experiences. "Field trips" received their lowest score in junior high schools, their highest in senior high schools. Larger classes at the junior-high-school level may be one reason for the limited use of field trips for these homemaking pupils. Another may be more flexible scheduling arrangements in senior high schools.

Variations in the Use of Some Specific Practices

How much are the 30 provisions and practices used in the different types and sizes of schools represented in the sample? A summary of replies shows some of the variations in their use as these are related to the type of school—junior, regular, or senior high—and the size of the enrollment.

Use as learning experiences personal and family problems real to pupils.—This item was ranked high in teaching both fast and slow learners in every size and type of school. It got greater emphasis in the regular and senior high schools than at the junior-high-school level. While the same amount of attention was given to this practice in connection with teaching rapid learners in schools of every size, teachers in small schools used real personal and family problems with slow learners more frequently than teachers in schools with enrollments over 500. Replies showed equal emphasis with rapid and slow learners in each category analyzed. (See tables 13 and 14.) Apparently teachers use this practice with all pupils regardless of the speed with which they learn. The fact that there is relatively less emphasis given

Table 13.—Instructional provisions and procedures in home economics, by type of organization and size of school

Item No.	Item	Type of organization						Enrollment							
		All schools (604) ¹		Junior high school (311)		Senior high school (106)		Regular high school (187)		200-400 (186)		500-999 (231)		1000+ (135)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1	Encourage each pupil to do as much as his ability permits.....	1.89	1	1.89	1	1.92	1	1.87	1	1.88	1	1.89	1	1.91	1
2	Emphasize ways of conserving time and energy in class activities.....	1.74	2	1.80	2	1.65	2	1.71	2	1.74	2	1.76	2	1.75	2
3	Encourage pupils to work at own rates of speed.....	1.71	3	1.69	3	1.78	3	1.73	3	1.71	3	1.70	3	1.75	3
4	Encourage pupils with creative ideas, interests, and talents to develop them.....	1.70	4	1.67	4	1.79	4	1.70	4	1.70	4	1.69	4	1.73	4
5	Allow pupils to select projects of varying degrees of difficulty.....	1.67	5	1.69	5	1.76	5	1.74	5	1.71	5	1.68	5	1.66	5
6	Closely supervise class activities.....	1.66	6	1.72	6	1.60	6	1.61	6	1.64	6	1.63	6	1.67	6
7	Encourage pupils to carry on home projects.....	1.63	7	1.57	7	1.70	7	1.66	7	1.73	7	1.61	7	1.62	7
8	Use as learning experiences personal and family problems that are real for pupils.....	1.62	8	1.57	8	1.68	8	1.67	8	1.68	8	1.65	8	1.62	8
9	Provide for pupil participation in choosing and planning learning experiences.....	1.61	9	1.54	9	1.70	9	1.68	9	1.63	9	1.62	9	1.63	9
10	Demonstrate manipulative processes and explain each one with illustrative material.....	1.60	10	1.63	10	1.60	10	1.55	10	1.60	10	1.59	10	1.63	10
11	Encourage pupils to plan ways to interpret the homemaking program.....	1.57	11	1.52	11	1.65	11	1.60	11	1.59	11	1.56	11	1.63	11
12	Emphasize manipulative activities.....	1.53	12	1.59	12	1.51	12	1.46	12	1.51	12	1.55	12	1.52	12
13	Provide for pupil participation in setting goals and evaluating progress.....	1.50	13	1.51	13	1.50	13	1.44	13	1.50	13	1.48	13	1.55	13
14	Provide simple and graphic reference materials.....	1.50	14	1.51	14	1.57	14	1.44	14	1.44	14	1.43	14	1.54	14
15	Provide opportunity to develop homemaking skills through routine care of homemaking rooms.....	1.47	15	1.56	15	1.34	15	1.41	15	1.43	15	1.41	15	1.46	15
16	Encourage extensive use of the school and homemaking department libraries.....	1.46	16	1.39	16	1.55	16	1.51	16	1.50	16	1.44	16	1.44	16
17	Use audio and visual aids.....	1.42	17	1.39	17	1.43	17	1.43	17	1.34	17	1.43	17	1.40	17
18	Encourage independent study of student-selected topics.....	1.40	18	1.33	18	1.53	18	1.45	18	1.41	18	1.41	18	1.37	18
19	Encourage selection of simple projects that can be completed within a short period of time.....	1.38	19	1.30	19	1.17	19	1.35	19	1.28	19	1.41	19	1.37	19
20	Encourage pupils to carry on experimental projects (with various homemaking activities).....	1.33	20	1.23	20	1.48	20	1.42	20	1.43	20	1.29	20	1.30	20
21	Provide pupils opportunity to learn about jobs which make use of homemaking skills.....	1.30	21	1.13	21	1.35	21	1.20	21	1.23	21	1.13	21	1.29	21
22	Allow pupils to repeat projects or activities to develop skills.....	1.17	22	1.15	22	1.17	22	1.20	22	1.08	22	1.13	22	1.24	22
23	Provide additional individual help outside of class.....	1.16	23	1.12	23	1.26	23	1.18	23	1.16	23	1.20	23	1.08	23

24	Allow pupils to serve as assistant teachers.	1.10	24	1.11	24	1.12	25	1.07	25	1.02	24.5	1.15	22.5	1.08	22.5
25	Provide for much repetition.	1.01	25	1.08	25	.91	25	.97	25	.94	27	1.04	25	1.06	25
26	Provide pupils opportunity to investigate jobs open to professionally trained home economists.	.91	26	.68	27.5	1.23	21.5	1.09	24	1.02	24.5	.84	26	.90	26
27	Provide opportunity to interpret statistical and graphic data about homes and families.	.86	27	.73	26	1.04	27	.96	27	.98	26	.80	28	.84	27
28	Arrange field trips to homes, stores, factories, etc.	.84	28	.66	27.5	1.09	26	.94	28	.92	28	.83	27	.74	28
29	Encourage pupils to prepare articles about homemaking activities for school and local papers.	.75	29	.67	29	.82	29	.94	29	.87	29	.76	29	.82	30
30	Provide opportunity for pupils to assist in making plans for and keeping department accounts.	.67	30	.60	30	.81	30	.71	30	.73	30	.65	30	.64	29

1 Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

Table 14.—Instructional practices and procedures in home economics, by type of organization and class of school

SLOW LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (804)		Junior high school (211)		Senior high school (106)		Regular high school (187)		200-400 (189)		500-999 (281)		1000+ (126)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	6	5	8	7	8	9	10	11	13	13	14	15	18	
1	Closely supervise class activities	1.92	1	1.92	1	1.92	1	1.91	1	1.90	1	1.90	1	1.97	1
2	Encourage each pupil to do as much as his ability permits	1.88	2	1.88	2	1.88	2	1.88	2	1.87	2	1.87	2	1.92	2
3	Encourage selection of simple projects that can be completed within a short period of time	1.79	3	1.83	3	1.78	3	1.76	3	1.81	3	1.77	3	1.81	3
4	Emphasize ways of conserving time and energy in class activities	1.70	4	1.76	4	1.80	6	1.82	7	1.88	5	1.70	4	1.72	5
5	Demonstrate manipulative processes and explain each one with illustrative material	1.67	5	1.87	5	1.75	4	1.83	9	1.88	6	1.95	5.5	1.74	4
6	Encourage pupils to work at own rates of speed	1.68	6	1.88	7	1.87	7	1.84	8	1.89	8	1.95	5.5	1.70	6
7	Emphasize manipulative activities	1.63	7	1.88	8	1.88	8.5	1.85	8.5	1.84	9	1.84	7	1.69	7
8	Use as learning experience personal and family problems that are real for pupils	1.60	8	1.83	10	1.70	5	1.85	4	1.70	4	1.88	8	1.55	9
9	Encourage pupils to carry on home projects	1.56	9	1.87	11	1.68	8.5	1.86	8.5	1.63	7	1.81	9	1.67	14
10	Provide opportunity to develop housekeeping skills through routine care of homemaking rooms	1.63	10	1.89	8	1.44	18	1.66	13	1.48	10	1.87	8	1.80	12
11	Provide for much repetition	1.49	11	1.84	9	1.47	17	1.43	16	1.41	14.5	1.80	11	1.86	8
12	Use audio and visual aids	1.46	12	1.43	13	1.33	13.5	1.47	11.5	1.37	17.5	1.47	12.5	1.84	10
13	Allow pupils to repeat projects or activities to develop skills	1.45	13	1.41	14	1.45	11	1.43	15	1.38	20	1.41	14.5	1.81	13
14	Provide simple and graphic reference materials	1.45	13.5	1.44	13	1.31	15	1.43	16	1.38	16	1.47	12.5	1.83	11
15	Allow pupils to select projects of varying degrees of difficulty	1.43	14.5	1.34	17	1.34	13	1.34	10	1.47	11.5	1.44	14	1.38	17
16	Encourage pupils with creative ideas, interests, and talents to develop them	1.43	14.5	1.40	15	1.30	16	1.44	14	1.46	12	1.43	15	1.42	15
17	Provide additional individual help outside of class	1.41	15	1.35	16	1.36	10	1.41	15.5	1.47	11.5	1.36	15	1.35	16
18	Provide for pupil participation in choosing and planning learning experiences	1.41	15.5	1.35	16	1.36	10	1.41	15.5	1.47	11.5	1.36	15	1.35	16
19	Encourage pupils to plan ways to interpret the homemaking program	1.38	16	1.33	18	1.33	13.5	1.47	11.5	1.41	14.5	1.41	16.5	1.41	16
20	Provide for pupil participation in setting goals and evaluating progress	1.38	16	1.33	18	1.33	13.5	1.47	11.5	1.41	14.5	1.41	16.5	1.41	16
21	Encourage extensive use of the school and homemaking department libraries	1.31	17	1.30	20	1.33	21	1.33	20	1.37	17.5	1.37	19	1.32	20
22	Provide pupils opportunity to learn about jobs which make use of homemaking skills	1.26	18	1.19	21	1.36	20	1.39	21	1.39	20	1.31	20	1.34	19
23	Encourage pupils to carry on experimental projects (with various homemaking activities)	1.13	19	1.04	22	1.31	23	1.17	23	1.13	21	1.14	23	1.13	23
24		1.08	20	.94	23	1.19	23	1.09	24	1.06	22	1.01	24	1.02	24

24	25	26	27	28	29	30
Encourage independent study of student-selected topics.....	1.00	.83	.91	.87	.82	.73
Arrange field trips to homes, stores, factories, etc.....	.04	.26	.27	.26	.27	.26
Provide opportunity to interpret statistical and graphic data about homes and families.....	.03	.27	.26	.27	.26	.26
Allow pupils to serve as assistant teachers.....	.06	.26	.27	.26	.27	.26
Provide pupils opportunity to investigate jobs open to professionally trained home economists.....	.06	.26	.27	.26	.27	.26
Provide opportunity for pupils to assist in making plans for and keeping department accounts.....	.06	.26	.27	.26	.27	.26
Encourage pupils to prepare articles about homemaking activities for school and local papers.....	.06	.26	.27	.26	.27	.26
	.44	.44	.44	.44	.44	.44

1 Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

to using problems real to pupils at the junior- than the senior-high level suggests a need for improving this aspect of teaching in junior high schools. Boys and girls take different home responsibilities at different age levels, and attention might well be directed toward increasing the tie between homemaking instruction at each level and the problems met in daily living.

Encourage pupils to carry on home projects.—This was another item ranked high by teachers responding to the home-economics section of the form. More attention is directed toward this at the senior-high-school level than in junior high school for both rapid and slow learners. Small schools emphasize home projects more than those with large enrollments. This emphasis may be partially accounted for by the fact that in a small-school situation the teacher may have fewer pupils and be better acquainted with each of them. Lower enrollments in elective classes in senior high schools, contrasted with large numbers in seventh- and eighth-grade homemaking, probably also account for some of the difference in extent to which teachers encourage pupils to carry on home projects at the two levels. The importance of providing experiences in a real setting if they are to contribute to lasting learning has been demonstrated. Homemaking teachers who work with large numbers of pupils may need help in thinking through ways to encourage home experiences and provide in other ways experiences closely related to pupils' homes and community.

Pupil participation in planning and evaluation.—Ranking ninth among the practices used with rapid learners was the item "provide for pupil participation in choosing learning experiences." The amount of such participation increases as pupils advance from junior to senior high school. Size of school does not affect the means on this item. The same tendency of increased use with advancing grade level was shown in replies concerning the use of this practice with slow learners. Again, school size did not affect the mean score. With slow learners, however, teachers ranked this item much lower (17.5), and mean scores averaged about 0.20 below scores for rapid learners in the same types and sizes of schools.

Ranking lower than participation in choosing and planning learning experiences for both rapid and slow learners was another item on participation, "Provide for pupil participation in setting goals and evaluating progress." Neither changes in grade level nor differences in size of schools affected the amount of use teachers reported making of this practice.

The contrast between amounts of use made of these two provisions raises several questions: Is it more important for pupils to participate in choosing learning experiences than in setting goals and evaluating progress? Has the emphasis given to pupil participation in teacher education programs been concentrated too much on the one area—choosing learning experience? teachers may need help in providing opportunities for these pupils to partake of two items for junior high school and slower learning pupils suggest that ~~crease with the~~ grade level of pupils? Do the lower mean scores on these Should not pupil participation in setting goals and evaluating progress in-

ticipate in the development of homemaking education programs that will meet their needs?

How much are practices emphasizing development of initiative and independence used?—Seven of the 30 items on the home economics questionnaire were general statements related to the development of initiative and independence on the part of pupils. These items were reported as in frequent use by teachers who were considered in their schools to be effective in working with rapid learners. Five of these items ranked among the 10 practices reported as receiving the most attention in teaching rapid learners. Out of five additional items suggesting *specific* activities which might stimulate the rapid learning homemaking pupil to use his abilities to best advantage, four had mean scores which placed them in the lower half of the list of 30 items when they were arranged in order of frequency of use with rapid learners. This leads us to ask whether teachers subscribe to the general principle of developing initiative and independence on the part of pupils, but do not actually provide the experiences which would implement their beliefs. A different type of device than this questionnaire would need to be used to get information to answer that question adequately.

As might be expected, all of the items relating to initiative ranked lower in use with slow learners than with fast. For slow learners only 2 of the 12 practices ranked in the upper half of the list when the 30 items were arranged in order of most frequent use with them. These were the general statements: (1) Encourage each pupil to do as much as his ability permits and (2) encourage pupils to work at own rates of speed.

How much attention do homemaking teachers give to providing special help, opportunities, or materials?—Three items on the questionnaire dealt with provisions for special help—close supervision, demonstrations of manipulative processes, and additional help outside of class. The first two of these were reported in frequent use with both rapid and slow learners. The last one is used to only a limited extent with either group. All three of the items get more attention in connection with the teaching of slow learners.

Seven of the items listed in the questionnaire were concerned with the provision of special opportunities or materials. None of these ranked among the 10 provisions used most frequently with either rapid or slow learners. It would be expected that items concerned with *general* provisions and procedures might receive more attention than those suggesting provisions of *special* opportunities and materials. Let us, therefore, consider the extent to which *some* attention is given to special provisions and raise a few questions about the desirability of the emphasis now given.

The means in the columns on page 68 indicate that these teachers provided more special opportunities and materials for rapid learners than for slow, except on the item "Allow slow pupils to repeat projects or activities to develop skills." It seems strange that more opportunity was given for

rapid learners to learn about jobs that make use of homemaking skills than to investigate jobs for persons with professional training in home economics.

Item	Mean for rapid learners	Mean for slow learners
Provide simple and graphic reference materials	1.50	1.45
Use audio and visual aids	1.42	1.46
Provide pupils opportunity to learn about jobs which make use of homemaking skills	1.20	1.13
Allow pupils to repeat projects or activities to develop skills	1.17	1.45
Provide pupils opportunity to investigate jobs open to professionally trained home economists91	.56
Provide opportunity to interpret statistical and graphic data on home and families86	.64
Arrange field trips to homes, stores, factories, etc84	.83

Summary

All of the homemaking teachers whose practices in teaching rapid and slow learners were reported for this study seem committed to the principle of encouraging each pupil to do as much as his ability permits. This item ranked at the top of the list of provisions for both rapid and slow learners and received high mean scores in every size and type of school.

Provisions and practices used most in the schools replying in this study were similar for both rapid and slow learners. Likewise, least used provisions were the same for both groups.

The teachers in the 604 schools which submitted usable replies to the questionnaire tend to provide more opportunities for the rapid learner to take initiative in planning and to carry responsibility in the homemaking program than for slow learners.

Field trips to homes, stores, and factories apparently do not play a large part in providing real-life learning experiences in these schools. Schools with small enrollments tend to provide more opportunities for field trips than larger schools, and senior-high-school homemaking pupils have more field experiences than do those in junior-high-school homemaking classes.

More emphasis is given to relating learning experiences to situations which are real to pupils at the high-school level than in junior high school. Teachers in small schools stressed this practice more than those in large schools.

High-school pupils in schools with low enrollments do more home project work than do pupils in larger schools or in junior high schools.

Pupil participation in planning learning experiences increased in the reporting schools with the age and grade level of the pupils. These factors did not change the amount of pupil participation reported in connection with setting goals and evaluating learning experiences.

Provision of special help in the form of close supervision and demonstrations of manipulative processes was common in the schools in this study. Somewhat more use was made of both of these techniques with slow learners, but they were used frequently with rapid learners also. Additional indi-

vidual help outside of class received rather low mean scores in every size and type of school. In the schools reporting, additional help with home-making problems was more likely to be available in the small school than in the large, for senior- than for junior-high-school pupils, and for slow learners than for rapid learners.

Industrial Arts

Knowledge of individual differences of pupils was an important factor leading to the introduction of industrial-arts courses in American schools. In fact, some schools considered industrial arts as a "special subject" for pupils with manipulative rather than academic interests. Often pupils were encouraged to enroll in industrial-arts courses because they had individual interests, aptitudes, or talents which were different from those usually considered essential for success in traditional courses where a premium was placed on verbal and abstract reasoning abilities.

In other words, some schools recognized individual differences in pupils by offering a wide range of courses, usually on an elective basis, which required different interests, proficiencies, skills, and aptitudes for success. Thus, industrial-arts courses were devised for the pupil with mechanical abilities; interest in things; creative craftsmanship; a desire for individual expression; facility for working with tools, machines, and materials; and a desire for direct firsthand experiences to supplement vicarious classroom experiences.

As the general education values of industrial-arts courses were recognized, they became required courses for most boys for at least 1 or 2 years in the junior or senior high schools. It was then realized that teachers needed to make considerable modifications of the course content and teaching methods which had been used in the courses designed as electives for special-interest groups.

Since industrial-arts courses had been designed for selected pupils with somewhat homogeneous interests and abilities, teachers were faced with the problem of adapting the content and instructional procedures in the general or required courses to heterogeneous groups of pupils with a wide range of differences. Many of the teaching techniques and procedures previously used by industrial-arts teachers were no longer successful.

Some schools attempted to classify students in industrial-arts classes on the basis of intelligence and achievement in academic courses. This procedure has been almost entirely abandoned in favor of general shop and laboratory-of-industries courses which permit considerable teacher and pupil flexibility, adaptability, and resourcefulness. Instead of rigid and standardized courses based upon uniformity of content, teaching method, and outcomes, industrial-arts teachers are utilizing a wide variety of teaching techniques and pupil-learning experiences based on a knowledge of individual pupils, their capacities, interests, goals, and aspirations.

Tables 15 and 16 indicate the responses of industrial-arts teachers in a

Table 15.—Instructional practices and procedures in industrial arts, by type of organization and size of school

RAPID LEARNERS

Item No.	Item	Type of organization						Enrollment							
		All schools (408)		Junior high school (286)		Senior high school (28)		Regular high school (17)		200-400 (168)		500-600 (262)		1,000+ (126)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1		3	4	5	3	7	8	9	10	11	12	13	14	15	16
1	Encourage students with original, inventive, and creative ideas, interests, and talents to carry out their ideas.	1.72	1	1.74	1	1.70	2	1.73	1	1.73	1	1.73	1	1.71	2
2	Place emphasis upon student projects which develop problem-solving skills and critical thinking.	1.64	2.5	1.60	6	1.71	1	1.70	2	1.67	2	1.66	3	1.69	4
3	Conduct demonstrations of processes and operations students use in constructing projects.	1.68	2.5	1.70	3	1.60	6	1.62	4.5	1.66	4.5	1.67	3	1.73	1
4	Encourage cooperative pupil-teacher planning of projects and activities.	1.69	4	1.61	5	1.66	3	1.62	4.5	1.68	3	1.68	3	1.69	4
5	Place emphasis on the development of simple handtool-using skills.	1.61	5	1.73	2	1.61	5	1.60	9	1.67	6	1.66	4	1.69	4
6	Encourage and assist students to develop industrial arts hobby interests through home work shops and other leisure-time activities.	1.67	6	1.69	4	1.60	9	1.64	6.5	1.69	4.5	1.67	6	1.68	6
7	Require high degree of precision and accuracy in projects pupils construct.	1.63	7	1.63	8	1.65	4	1.64	3	1.64	7.5	1.63	7	1.63	7
8	Urge students to make extensive use of the school and/or the industrial arts shop library.	1.61	8	1.60	7	1.63	7	1.63	8	1.64	7.5	1.60	8	1.61	8
9	Require expert degree of craftsmanship of students.	1.63	9	1.66	11	1.63	8	1.64	6.5	1.65	9	1.68	9	1.64	9
10	Develop home mechanics skills essential in the maintenance of the home and its mechanical appliances.	1.64	10	1.60	9	1.66	10.5	1.60	11	1.67	10.5	1.62	11	1.66	12
11	Give students opportunities for experiences in managing the industrial arts shop, supplies, records, safety, etc.	1.62	11	1.67	10	1.61	13	1.64	10	1.65	12	1.63	11	1.64	10
12	Provide opportunities for intensive repetitive tool-using exercises.	1.64	12	1.61	12	1.66	10.5	1.63	14	1.63	13	1.62	14	1.64	14
13	Inform students about and urge participation in craftsmen's fairs, exhibitions, and industrial arts awards programs.	1.61	13	1.60	14.5	1.65	14	1.64	12	1.65	14	1.63	15	1.66	12
14	Require students to follow teacher directions and teacher-made plans.	1.67	14	1.68	13	1.62	12	1.64	13	1.63	12	1.64	13	1.68	16
15	Encourage pupils to undertake simple projects which can be completed in short amounts of time.	1.67	15	1.60	14.5	1.61	21	1.60	23.5	1.68	16	1.68	16	1.64	15
16	Develop consumer literacy through units on the selection and use of industrial products.	1.68	16.5	1.68	16	1.69	16.5	1.64	15.5	1.68	17	1.66	17	1.68	17.5
17	Develop consumer skills and knowledge by having students compare the design, construction, materials used, operation, and costs of common household appliances.	1.68	16.5	1.67	15	1.68	15	1.63	15	1.67	16.5	1.62	18	1.66	13

18	Encourage students to read, observe, and evaluate various types of shop-management plans involving personnel, equipment, and supplies used in schools and industry.	97	12.5	98	19	89	14.5	1.04	14.5	86	19	84	19	1.04	1.04	19.5
19	Have students read about, observe, and discuss modern industrial processes and techniques which cannot be carried on in the school.	97	12.5	99	17	95	12.5	89	19	97	21	97	12	1.08	1.08	17.5
20	Provide additional time in the industrial arts shop for students.	99	20.5	94	25.5	92	20	92	22	90	13	90	20	79	79	24
21	Encourage students to work on group projects involving the application of production methods and techniques.	99	20.5	93	22	96	15.5	1.03	15	94	20	99	21	86	86	22
22	Provide facilities and encourage students to test the physical properties of commonly used industrial materials, such as metals, plastics, wood, textiles, leather and paper.	97	22	99	20	92	24.5	93	23.5	93	22	93	22	1.04	1.04	18.5
23	Have students read books about labor, art, scientists, industrialists, and industrial problems.	94	22	97	21	90	22.5	79	22.5	92	24	92	22	96	96	21
24	Urge students to read about, discuss, and observe the effects of technological development and industrialization in a community, State, or region.	79	24	72	22	96	22.5	79	22.5	90	22	96	24	90	90	22
25	Arrange for students to have first-hand observations of industry and industrial processes carried on in the community.	99	25	67	27	92	24.5	77	26	90	25	94	26	61	61	27
26	Provide opportunities for students to apply, test, and experiment with science principles in electronics, metallurgy, mechanics, kinematics, etc.	99	26	61	24	99	27	86	26	99	26	96	27	84	84	26
27	Teach students to interpret statistical and graphic data about industry.	99	27	64	25.5	97	29	86	29	96	27	97	28	82	82	26
28	Encourage students to investigate and become familiar with labor union policies and activities.	95	28	26	28	98	28	55	29	93	28	97	29	81	81	28
29	Assist students in arranging interviews with industrialists, employers, labor, and business leaders in the community about industrial problems and trends.	93	29	25	29	94	29	99	27	96	26	96	29	45	45	29

¹ Number of unstable returns.

² Items are arranged in rank order and do not conform to original numbering.

random sampling of junior and senior high schools. Their responses dealt with techniques and procedures used by teachers considered most effective in teaching rapid- and slow-learning pupils.

All of the 29 techniques were used to some degree by the teachers responding to the questionnaire. Some of the methods are considered more promising than others in teaching rapid- or slow-learning pupils. An examination of the responses also indicates that industrial-arts teachers use some procedures in teaching all pupils irrespective of the facility with which they learn.

Rapid Learners

The procedures most commonly used by industrial-arts teachers in teaching rapid learners are those which "Encourage students with original, inventive, and creative ideas, interests, and talents to carry out their ideas" (item 1) table 15 and those which "Place emphasis upon student projects which develop problem-solving skills and critical thinking" (item 2). Teacher emphasis upon inventiveness and creativeness does not vary with type or size of school. Slightly more effort is placed upon the development of problem-solving skills and critical thinking in regular and senior high schools than in junior high schools (item 2).

Teachers in regular and senior high schools also require higher degrees of precision and accuracy in projects which rapid learners construct (item 7) than do junior-high-school teachers. Size of school makes no difference in the emphasis placed on precision and accuracy.

Industrial-arts teachers in junior high schools and medium-sized schools place more emphasis upon the development of simple handtool-using skills (item 5) in teaching rapid learners than do teachers in schools of other categories.

Slightly more attention is given to the development of hobby interests and leisure-time activities in junior high schools and schools with small enrollments than in senior, regular, or larger schools.

More opportunities are available to rapid learners in managing the industrial-arts shop, supplies, records, etc. (item 11), in junior high schools and large schools than in schools of other types and sizes.

Teachers in regular and large schools more frequently inform students about and urge their participation in craftsmen's fairs, exhibitions, and industrial-arts-awards programs (item 13), than do teachers in other types of schools.

Junior-high-school teachers and teachers in schools enrolling 500-999 pupils require students to follow teacher directions and teacher-made plans (item 14) more frequently than teachers in other schools.

Leaders in industrial-arts education have advocated for many years that industrial-arts experiences should help students develop insights and understandings of the impact and importance of industry in American life. This study indicates that teachers do not make extensive use of methods which

require rapid learners to read books, make community studies, go on industrial visitations, or conduct interviews with industrial and labor leaders.

Although developments in the physical sciences have affected all phases of modern industry, the provision of opportunities for students to apply, test, and experiment with science principles in electronics, metallurgy, mechanics, etc. (item 26), received a use index rating of 0.59 and a rank of only 26 among the 29 items listed.

Slow Learners

All of the 29 procedures used by industrial-arts teachers in instructing rapid learners are used in instructing slow learners. However, the pattern of techniques most commonly used in teaching slow learners is different from that used with rapid learners. The range of techniques most commonly used is narrower; and, in general, the extent of use is not as great as was the case with procedures most frequently used with rapid learners.

Seventeen items received a use index rating of 1.00 or above in table 15, rapid learners. Only 14 items received an index rating of 1.00 or above in table 16 for slow learners.

Most industrial-arts teachers use the "show how" method of demonstrating processes and operations students use constructing projects (item 1). This method of teaching slow learners is used with almost the same emphasis by industrial-arts teachers in all types and sizes of secondary schools.

The need for reliance upon teacher demonstrations is apparent because the second- and third-rating procedures for slow learners place emphasis upon the development of simple handtool-using skills (item 2, table 16) and the provision of opportunities for intensive repetitive tool-using exercises. Most stress is put upon items 1 and 3 by junior-high-school teachers.

Less effort is placed on the development of home mechanics skills essential in the maintenance of the home and its mechanical appliances (item 8, table 16) in teaching slow learners than in teaching rapid learners. Slightly more home mechanics teaching is done in junior high schools and regular high schools than in senior high schools.

Teaching and learning experiences involving reading about industry, observing industrial enterprises in the community, and interviewing industrial and labor leaders all rank in the bottom third of the procedures listed.

Summary

Analysis of the provisions industrial-arts teachers make in instructing rapid and slow learning pupils indicates that:

1. Some effort is being made to use different instructional procedures in teaching pupils of high and low ability.
2. More extensive use is made of the 29 procedures listed in teaching rapid learners than slow learners.
3. Some techniques used by teachers in teaching rapid learners are also used, but to a less degree, in teaching slow-learning pupils.

Table 16.—Instructional provisions and procedures in industrial arts, by type of organization and size of school
SLOW LEARNERS

Item No.	Item	Type of organization								Enrollment			
		All schools (666) ¹		Junior high school (266)		Senior high school (86)		Regular high school (172)		300-499 (165)		500-999 (263)	
		Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
1	3	.8	4	.6	6	.7	8	.9	10	11	12	13	14
1	Conduct demonstrations of processes and operations students use in constructing projects	1.78	1	1.79	2	1.77	2	1.79	1	1.76	1	1.96	1
2	Place emphasis on the development of simple hand-tool-using skills	1.73	2	1.75	3	1.78	1	1.68	2	1.69	3	1.77	2
3	Encourage pupils to undertake simple projects which can be completed in short amounts of time	1.66	3	1.92	1	1.86	3	1.80	3	1.70	2	1.63	4
4	Provide opportunities for intensive repetitive tool-using exercises	1.55	4	1.62	4	1.42	5	1.50	5	1.47	6	1.72	3
5	Encourage and assist students to develop industrial arts hobby interests through home workshops and other leisure-time activities	1.45	5	1.48	6	1.41	6	1.43	6	1.48	4.5	1.45	5
6	Encourage cooperative pupil-teacher planning of projects and activities	1.41	6	1.50	5	1.43	4	1.51	4	1.48	4.5	1.38	6
7	Require students to follow teacher directions and teacher-made plans	1.30	7	1.35	8	1.27	8	1.32	8	1.20	10	1.36	7
8	Develop home mechanics skills essential in the maintenance of the home and its mechanical appliances	1.29	8	1.32	9	1.15	10	1.31	9	1.23	7.5	1.26	9
9	Encourage students with original, inventive, and creative ideas, interests, and talents to carry out their ideas	1.27	9.5	1.40	7	1.21	9	1.30	10	1.24	9	1.31	8
10	Urge students to make extensive use of the school and/or the industrial arts shop library	1.27	9.5	1.23	10	1.28	7	1.34	7	1.33	7.5	1.24	10
11	Place emphasis upon student projects which develop problem-solving skills and critical thinking	1.08	11	1.02	12	1.08	11	1.21	11	1.16	11	1.08	11
12	Give students opportunities for experiences in managing the industrial arts shop, supplies, records, safety, etc.	1.07	12	1.10	11	.98	14	1.07	12.5	1.12	12	1.03	12
13	Provide additional time in the industrial arts shop for students	1.01	13	.97	13	1.06	12.5	1.02	14	1.11	13	.99	14
14	Require high degrees of precision and accuracy in projects pupils construct	1.00	14	.93	15	1.05	12.5	1.07	12.5	1.02	14	1.00	13
15	Inform students about and urge participation in craftsmen's fairs, exhibitions, and industrial arts awards programs	.94	15	.94	14	.91	15.5	.96	16.5	.90	17	.91	15
16	Require expert degree of craftsmanship of students	.90	16	.89	16	.91	15.5	.93	18	.93	16	.89	17
17	Develop consumer literacy through units on the selection and use of industrial products	.88	17	.87	17	.79	19	.96	16.5	.91	16	.82	19
18	Develop consumer skills and knowledge by having students compare the design, construction, materials used, operation, and costs of common household appliances	.84	18.5	.75	19.5	.86	17.5	.97	15	.78	19	.87	18

19	Encourage students to work on group projects involving the application of production methods and techniques.	.84	18.5	.80	18	.86	17.5	.90	19	.84	18	.90	16	.72	21
20	Provide facilities and encourage students to test the physical properties of commonly used industrial materials, such as metals, plastics, wood, textiles, leather, and paper.	.74	20	.75	19.5	.68	28	.78	21.5	.70	20	.72	20	.83	19
21	Have students read about, observe, and discuss modern industrial processes and techniques which cannot be carried on in the school.	.71	21	.66	21	.74	20	.79	20	.67	21.5	.70	21	.79	20
22	Encourage students to read, observe, and evaluate various types of shop management plans involving personnel, equipment, and supplies used in schools and industry.	.66	22	.60	22	.67	22	.75	23	.67	21.5	.82	22	.67	22
23	Have students read books about inventors, scientists, industrialists, and industrial problems.	.59	28	.57	23	.61	24	.63	24	.58	23	.57	24	.66	23
24	Arrange for students to have firsthand observations of industry and industrial processes carried on in the community.	.53	24	.47	24.5	.71	21	.73	21.5	.57	24	.64	23	.55	25
25	Urge students to read about, discuss, and observe the effects of technological development and industrialization in a community, State, or region.	.37	25	.47	24.5	.59	25	.62	25	.53	25	.50	25	.63	24
26	Encourage students to investigate and become familiar with labor union policies and activities.	.36	26	.28	27	.43	27	.47	26	.32	29	.36	26	.43	26
27	Provide opportunities for students to apply, test, and experiment with science principles in electronics, metallurgy, mechanics, kinematics, etc.	.32	27	.31	26	.29	29	.36	29	.33	27.5	.28	28	.39	27
28	Assist students in arranging interviews with industrialists, employers, labor, and business leaders in the community about industrial problems and trends.	.31	28	.18	29	.47	26	.45	27	.38	26	.32	27	.35	28
29	Teach students to interpret statistical and graphic data about industry.	.30	29	.22	28	.33	26	.41	28	.33	27.5	.27	29	.32	29

¹ Number of usable returns.

*Items are arranged in rank order and do not conform to original numbering on the questionnaire.

4. Size or total enrollment of a school does not appear to be a significant factor influencing the teaching procedures used.
5. School organization does not appear to affect the manner in which industrial-arts teachers provide for individual differences.
6. In teaching rapid learners, greatest emphasis is placed upon the development of inventiveness, creativeness, problem solving, expert craftsmanship, observing, reading, and discussing the effects of industrialization.
7. In teaching slow learners, greatest emphasis is placed upon pupil projects which provide repetitive tool-using exercises, which require pupils to follow teacher-made plans, directions, and demonstrations, and which can be completed in short periods of time. In some schools additional time is arranged for slow pupils in industrial-arts shops.
8. In teaching slow learners, greater emphasis is placed on "doing" experiences involving tools and materials in school shops than upon experiences involving books, community resources and observations, or interviews with industrial or labor leaders.
9. More use is made of techniques which encourage pupil initiative, originality, and resourcefulness in teaching rapid learners than in teaching slow learners.
10. Teachers use varied teaching procedures and expect different outcomes in terms of knowledge and skill in providing experiences for rapid- and slow-learning pupils in industrial arts.

CHAPTER V

Improving Instruction in Local Communities

IT IS DIFFICULT to generalize about procedures for rapid and slow learners in the eight different areas considered in this study. The principals who responded to the questions on administrative provisions indicated that the provisions listed for slow learners were used more extensively than were the provisions listed for rapid learners. Possibly this result can be explained by the nature of the provisions selected and listed for the two groups.

To the contrary, in each of the subject-matter areas the teachers judged most effective indicated that the 30 procedures were used to a greater degree with rapid learners than with slow learners. The differences were greatest in social studies and language arts, and least in home economics and mathematics. Here again it is possible that the results would have been different with different lists of procedures. It is also possible that teachers are more responsive to rapid learners and spontaneously develop procedures to accommodate them while the administrators are consciously and systematically devising administrative procedures for slow learners. In any event, it is apparent that more experimentation and evaluation are needed.

One of the three primary purposes of this study was to encourage and help schools in communities throughout America to study ways in which they can make better provisions for their rapid and slow learners. Since the inception of the study, hundreds of schools have used the questionnaire or various subparts of it as part of an inservice education program for improving the teaching of rapid and slow learners. Administrators, guidance personnel, and teachers who are concerned about the effectiveness of their instructional program are encouraged to make similar studies.

As is evident from an examination of the summaries of findings in chapters II and III and at the end of each subject-matter section in chapter IV, there is no standard type of program which is considered best for all schools. Just as each child is different from every other child, each community or local district has somewhat different population groups, cultural needs, and educational problems. There is no assurance, then, that many of the administrative, guidance, and instructional provisions and procedures described in this study would be equally useful in all high schools. The provisions and procedures are of value only if they help a school to realize its educational aims and purposes as agreed upon by citizen groups, students, and educational staff members. For example, homogeneous grouping or acceleration may or may not be a useful method of providing a better education for rapid learners, depending on the desires of parents, the attitudes and training of teachers, the tenure of the faculty, the flexibility of scheduling,

the availability of diverse instructional materials, the abilities and goals of students, and the quality of administrative leadership. The nature and scope of the subject would be other factors to consider. Homogeneous grouping or acceleration might be desirable in mathematics but undesirable in a social studies course.

Schools wishing to study their own program for rapid and slow learners might attempt to discover the effectiveness of their present curriculum through various evaluative techniques¹ and appraisal practices.² Rapid and slow learners might be identified according to some of the techniques listed in chapter III, not only to determine their intellectual capacity, but also their special talents, social maturity, health, interests, aptitudes, and goals. Students found to be performing below or above the level which their intelligence and other abilities would normally warrant would be studied individually in an attempt to discover the reasons for their retardation or advancement. Their common as well as individual problems would be identified.

The types of administrative provisions which might be tried in order to meet the needs of rapid and slow students would be studied and agreed upon by the principal, guidance officer, and teachers, as well as representative parents and students. Some of the major administrative provisions and procedures which might be considered are described in chapter II. These include ability grouping, supervised work experience, individualized instruction, special courses and curriculums, acceleration, remedial sections, and other provisions.

In order to judge the relative effectiveness of the procedures adopted, the faculty might set up an experimental study in which they would measure the progress of an experimental and control group of students matched on such bases as intelligence, reading ability, educational level, and sex. Among other things, an effort would be made to keep constant the quality of instructional materials and the teaching ability in both groups. Not only academic progress but also social development and character growth would be measured during the school year. Modestly conceived and carefully conducted studies of this type (done with the advice of a qualified consultant from a university, foundation, or State education department) would give the local staff a sound basis for carrying on a long-range program of curriculum improvement.

Administrative and guidance personnel can assist the classroom teacher to provide for rapid and slow learners in ways already described; but an equal, if not greater, role remains for the teacher. It is the teacher who adapts methods, uses materials, and provides experiences suitable to the individual requirements of his rapid and slow learners. He, often with the

¹ California. Department of Education. *Evaluating Pupil Progress*. Sacramento, The Department, April 1952. (Vol. XXI, Bull. No. 6.)

² U. S. Office of Education. *Pupil Appraisal Practices in Secondary Schools*. Circular No. 363. Washington 25, D. C., 1952.

help of his students, is the one who provides enrichment opportunities, organizes small groups and committees, suggests individual projects, motivates continuous developmental growth, encourages individual research and creative activity, suggests reading materials within the comprehension ability of pupils, and leads boys and girls to evaluate and chart their progress in the direction of significant goals. Specific techniques, provisions, and procedures which effective teachers of English, social studies, mathematics, science, home economics, and industrial arts are using with their rapid and slow learners are reported and discussed in chapter IV. Teachers looking for practices and procedures which may be worth while in teaching rapid and slow-learning pupils may consider and evaluate the findings reported in the six subject-matter divisions of chapter IV. Also, they may check their own successful practices with those included in the present study.

Teachers engaged in curriculum improvement programs, especially in the preparation and revision of resource units, may find many ideas in chapter IV for suggested activities which will help them to individualize their instruction. In planning and evaluating unit experiences, students and teachers together may wish to select certain instructional provisions and procedures included in this study. Also, they may suggest more specific ideas involving extensive reading, committee activity, group work, leadership experience, enrichment learning, and evaluation and appraisal procedures.

And, finally, because youth do not live and learn in school alone, all community groups and agencies should be considered and their assistance sought in planning a comprehensive and balanced instructional program for rapid and slow learners. Churches, the municipal council, police and fire departments, health department, service clubs, women's organizations, parent-teacher associations, youth clubs, business and industrial groups, labor unions, and other associations active in the community should assist the school in planning and carrying out a program which meets the needs of the rapid and slow learners, who, because they are deviates from the norm, are difficult to educate adequately under present conditions in the comprehensive American high school.

APPENDIX

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

OFFICE OF EDUCATION
WASHINGTON 25, D. C.

Dear _____:

The Secondary Schools Section in the Office of Education is engaged in a national study of provisions for rapid- and slow-learning pupils in high schools. This study is an effort to locate promising practices which can be publicized for the benefit of the many teachers and administrators seeking help in educating rapid and slow learners.

Because the holding power of the school is increasing and because high-school enrollments are about to surge upwards, this problem will soon become even more acute than it is today. All of us realize that our own national security may be vitally affected by the education these students receive.

Enclosed is a questionnaire with eight distinct parts. Part I is to be filled in by the principal; Part II, by the guidance counselor or principal. Other parts should be completed by department heads in the following fields: English, social studies, mathematics, science, home economics, and industrial arts. If there is no department head, please send the questionnaire to the senior teacher in the subject-matter department.

Will you or your assistant kindly distribute the parts of the questionnaire to the persons who are to supply the information. Also, will you have the different parts collected as soon as they are completed. Then return all parts in the enclosed envelope addressed to this Office. If, for any reason, certain parts cannot be finished, please return them also.

Each part of the questionnaire is reasonably short, therefore the job of completing it should not prove burdensome.

By carefully completing all parts of the questionnaire and returning them as soon as is convenient, you will be furthering a research project of vital significance today. We shall certainly appreciate your contribution since the Office is anxious to make the results available to you as soon as possible.

Sincerely yours,

J. DAN HULL,
Chief, Secondary Schools Section,
Instruction, Organization, Services.

Enclosure.

NOTE: This questionnaire may be reproduced in whole, or in part, by anyone desiring to use it.

Form RSS-21

DEPARTMENT OF
HEALTH, EDUCATION, AND WELFARE

OFFICE OF EDUCATION
WASHINGTON 25, D. C.

Budget Bureau No. 51-5302
Approval Expires: 12/31/53
School No. —

PROVISIONS FOR RAPID AND SLOW-LEARNING PUPILS IN SECONDARY
SCHOOLS

School: _____
City: _____
State: _____
Name of Principal: _____

SUGGESTIONS TO THE PRINCIPAL

1. You or your assistant may wish to assume responsibility for supplying the information called for in Schedule A and Part I.
2. You, your assistant, or a guidance counselor may wish to assume responsibility for Part II.
3. The chairman of the department or senior teacher in English, Social Studies, Mathematics, Science, Industrial Arts, and Home Economics may wish to assume responsibility for Parts III-A, B, C, D, E, and F.

DEFINITIONS FOR THIS STUDY

Rapid learners are those individuals who have superior intellectual capacity and/or special talents. They are usually among the highest 15 to 20 percent of the students in general intelligence.

Slow learners are those individuals who are distinctly below the average in intellectual capacity. Of the high-school population, they are among the lowest 15 to 20 percent in general intelligence.

SCHEDULE A. GENERAL INFORMATION

1. Organization of School (Check one): Four-Year High School _____ Junior High School _____ Senior High School _____ Combined Jr. and Sr. High School _____ Other _____
2. Type of School (Check one): Comprehensive _____ Vocational _____ Special _____ Technical _____ Other _____
3. Circle Grades (Junior and Senior) in your school: 6 7 8 9 10 11 12 13 14
4. If you have a core type of program, list grades _____; list subjects _____
5. Enter total enrollment in your school. _____

School No. _____

PART I

ADMINISTRATIVE PROVISIONS FOR RAPID and SLOW-LEARNING PUPILS

(NOTE—To be answered by the Principal.)

Encircle the "Yes" or "No" response to indicate which of the following administrative provisions have been or are being made for rapid- and slow-learning pupils in your school. Do not use the fourth column (Reason Number) until later.

Please answer each item.

A. PROVISIONS FOR BOTH RAPID AND SLOW LEARNERS	Being Used		Tried and Abandoned	
				Reason Number
1. Credit given for demonstrated achievement regardless of time spent in class	YES	NO	YES	
2. Summer school sessions provided	YES	NO	YES	
3. Transfer to special school encouraged	YES	NO	YES	
4. Flexible graduation requirements as to credits	YES	NO	YES	
5. Regular classes furnished advanced study materials and additional learning aids	YES	NO	YES	
6. Ability (homogeneous) classes. (Students grouped according to IQ, reading ability, previous grades, social maturity, etc.)	YES	NO	YES	
Name subjects: _____				
7. Supervised work experience	YES	NO	YES	
8. Teachers assigned on basis of traits and interests suitable for work	YES	NO	YES	
9. Individualized instruction outside of regular class hours	YES	NO	YES	
10. Space, furniture and equipment for flexible grouping in classes and activities	YES	NO	YES	
11. Job placement services	YES	NO	YES	
12. Teachers furnished guidance information pertinent to students	YES	NO	YES	
B. PROVISIONS FOR RAPID LEARNERS				
1. College preparatory curriculum	YES	NO	YES	
2. Elective classes in advance or specialized subjects (journalism, electronics, calculus, etc.)	YES	NO	YES	
3. Pupils sectioned in classes which do 2 years' work in 1; or 3 years' work in 2, etc.	YES	NO	YES	
4. Students permitted to carry above-normal class load for graduation credit	YES	NO	YES	
5. Remedial sections for able students whose performance is below capacity	YES	NO	YES	

PART I—Continued

B. PROVISIONS FOR RAPID LEARNERS	Being Used		Tried and Abandoned	
				Reason Number
6. Teachers assigned on basis of training and experience with rapid learners	YES	NO	YES	
C. PROVISIONS FOR SLOW LEARNERS				
1. Remedial sections where performance is below capacity in basic skills	YES	NO	YES	
2. Promotion of students on basis of physical and social development	YES	NO	YES	
3. Low ability classes in certain subjects. Name subjects: _____	YES	NO	YES	
4. Easy study materials related to students' interests	YES	NO	YES	
5. Teachers assigned on basis of training and experience with slow learners	YES	NO	YES	

REASONS FOR ABANDONING PRACTICE

If, in the "Tried and Abandoned" column, you have encircled "Yes" for any item, indicate your reason for abandoning the provision. Do this by choosing the appropriate reason below and writing its number in the last column. Where the reason is not stated below, write out your reason and use the appropriate number in the last column.

1. Program too expensive.
2. Loss of qualified staff member(s).
3. Objection by group of parents.
4. Small school enrollment.

5. Lack of interest.

6. _____
7. _____
8. ☒ _____

School No. —

PART II

TECHNIQUES USED IN DISCOVERING RAPID AND SLOW-LEARNING PUPILS

(NOTE.—To be answered by the Principal and/or Chief Guidance Counselor.)

In the appropriate column(s) check each item to indicate the extent that the following are being used in your school to discover rapid and slow learners.
Please answer each item.

Extent of use for Rapid Learners			INFORMATION OR TECHNIQUE	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Group intelligence tests.....			
			2. Individual intelligence tests.....			
			3. Standardised achievement tests.....			
			4. Standardised aptitude tests in specific fields.....			
			5. Anecdotal reports and records.....			
			6. Teachers' marks.....			
			7. Teachers' estimates of school achievement.....			
			8. Teachers' estimates of aptitudes.....			
			9. Teachers' estimates of intelligence.....			
			10. Parental appraisal of pupils' interests, aptitudes, and abilities.....			
			11. Guidance counselor's appraisal of pupils' interests, aptitudes, and abilities.....			
			12. Home room adviser's appraisal of pupils' interests, aptitudes, and abilities.....			
			13. Information on home environment.....			
			14. Information on personality adjustment.....			
			15. Information on social maturity.....			
			16. Information on physical health.....			
			17. Information on physical maturity.....			
			18. Information on reading interests and habits.....			
			19. Information on vocational plans.....			
			20. Information on hobbies.....			

U. S. OFFICE OF EDUCATION
BULLETIN, 1941-64.

1954
Bulletin No. 5

Original material located in University of Wisconsin Madison Memorial Library.

**BROOKHAVEN
PRESS 1978
WASH. D.C.**

FICHE 2

1954
BULLETIN
NO. 5
CONT.

School No. _____

PART III-A

INSTRUCTIONAL PROVISIONS AND PROCEDURES IN ENGLISH

(Note.—To be answered by Head or senior teacher of English Department.)

The purpose of this study is to locate promising practices which can be publicized for the benefit of the many teachers seeking help in educating rapid and slow learners. Because the holding power of the school is increasing and high school enrollments are about to surge upwards, this problem will soon become even more acute than it is today. Your contribution to this study will be appreciated.

Enter total number of students enrolled in all English classes. _____

Enter number of classes in which enrollment is: (a) less than 10 _____, (b) 10-19 _____, (c) 20-29 _____, (d) 30-39 _____, (e) 40-49 _____, (f) over 50 _____

Enter number of English teachers in department: Full-time: Men _____ Women _____
Part-time: Men _____ Women _____

Directions: In answering the items below, consider only the teacher in your department who is most effective in working with (a) rapid learners and/or (b) slow learners. If no teacher is extremely effective with these students, please return this blank to your principal. For this study, rapid learners are defined as those among the highest 15 to 20 percent in general intelligence; slow learners are those among the lowest 15 to 20 percent. In the appropriate columns, check each item to indicate the extent your extremely effective teachers are using the following practices in teaching: (a) rapid learners and (b) slow learners.

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Conduct detailed, intensive study of classics, such as Shakespeare's plays, <i>Silas Marner</i> , <i>Idylls of the King</i> , etc.			
			2. Encourage extensive reading of good literature outside of class.			
			3. Use simplified and/or abridged editions of books like <i>A Tale of Two Cities</i> for students.			
			4. Emphasize reading of modern literature related to student interests and needs.			
			5. Require memorization of specified number of lines of poetry or drama.			
			6. Assign printed materials with difficulty approximating individual's reading age.			
			7. Help students to find good substitutes for inferior comic books and magazines.			
			8. Teach symbolic interpretation (reading) of pictures, sketches, cartoons and other graphic material.			
			9. Encourage students to note differences in language used by public speakers and writers.			
			10. Provide extended experiences in evaluative listening.			
			11. Provide extended experiences in selecting and evaluating television programs. (Do not answer if television is not normally available in community).			
			12. Provide extended experiences in selecting and evaluating movies.			
			13. Provide extended experiences in evaluating newspapers and magazines for purpose, content and values.			
			14. Conduct drills to eliminate recurrent vulgarisms such as "I ain't," "can't hardly," "he don't," etc.			
			15. Require mastery of certain minimum essentials in grammar and usage.			

[illegible]

NOTE.—If you have had unusual success in adapting your language-arts program to rapid learners, to slow learners, or to both, would you please tell about your program on separate sheets of paper which you append to the questionnaire? Please describe: (1) what is taught, (2) how it is taught, (3) to whom it is taught. We should like to have your permission to use this material for publication purposes, if possible.

PLEASE RETURN COMPLETED FORM TO YOUR PRINCIPAL

School No. _____

PART III-B

INSTRUCTIONAL PROVISIONS AND PROCEDURES IN SOCIAL STUDIES

(Note—To be answered by Head or senior teacher of Social Studies Department.)

The purpose of this study is to locate promising practices which can be publicized for the benefit of the many teachers seeking help in educating rapid and slow learners. Because the holding power of the school is increasing and high school enrollments are about to surge upwards, this problem will soon become even more acute than it is today. Your contribution to this study will be appreciated.

Enter total number of students enrolled in all social studies classes. _____

Enter number of classes in which enrollment is: (a) less than 10 _____, (b) 10-19 _____, (c) 20-29 _____

(d) 30-39 _____, (e) 40-49 _____, (f) over 50 _____

Enter number of social studies teachers in department: Full-time: Men _____ Women _____

Part-time: Men _____ Women _____

Directions: In answering the items below, consider only the teacher in your department who is most effective in working with (a) rapid learners and/or (b) slow learners. If no teacher is extremely effective with these students, please return this blank to your principal. For this study, rapid learners are defined as those among the highest 15 to 20 percent in general intelligence; slow learners are those among the lowest 15 to 20 percent. In the appropriate columns, check each item to indicate the extent your extremely effective teachers are using the following practices in teaching: (a) rapid learners and (b) slow learners.

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Use pupil-teacher planning in studying social problems.....			
			2. Encourage pupils to select and plan to see and listen to radio, television programs, and movies of social significance.....			
			3. Encourage participation in local adult movements.....			
			4. Utilize resources of the local community for study.....			
			5. Arrange for preparation and presentation of radio and television programs.....			
			6. Provide experiences to help pupils learn how to find and apply for jobs.....			
			7. Use critical thinking when the class is seeking a solution for a social problem.....			
			8. Encourage and advise pupils to organize and operate student governments and manage extra-class activities.....			
			9. Teach pupils how to read a newspaper. (Learning to distinguish between fact and opinion, recognizing the use of propaganda devices, etc.).....			
			10. Use current events as an important part of class work.....			
			11. Encourage pupils to read classics of historical significance.....			
			12. Give pupils practice in reading all parts of news magazines. (Include medicine, music and art, science, as well as national and international news.).....			
			13. Use group process in which all pupils use information to find solutions for social problems.....			
			14. Have pupils make charts and graphs based on statistics.....			
			15. Teach pupils how to register and vote; give experiences in studying party platforms and personal views of candidates.....			
			16. Plan learning experiences in large units.....			

PART III-B—Continued

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			17. Assign individual research projects on selected topics.....			
			18. Use several textbooks for pupils of different ability rather than a single textbook.....			
			19. Use the socialized recitation to develop major ideas.....			
			20. Encourage pupils to make individual studies of the history of areas in which they have special interests—art, music, medicine, etc....			
			21. Encourage pupils to engage in conversation in school and at home on current events, politics, government, and news of school and neighborhood.....			
			22. Teach basic skills in reading and writing (including map reading) to build social studies vocabulary and concepts.....			
			23. Encourage pupils to use references in a large library.....			
			24. Teach pupils to use the layman's reference books: the dictionary, encyclopedia, World Almanac.....			
			25. Supervise the planning of culminating activities by class to organize major ideas of a unit.....			
			26. Assign biographies of recognized literary merit of men and women who have made important contributions to civilization.....			
			27. Provide experiences for pupils to examine prejudices and attitudes that are provincial.....			
			28. Evaluate the work of the class in terms of changes in behavior toward better citizenship.....			
			29. Encourage pupils to set up personal goals and to engage in self-evaluation to see progress.....			
			30. Lead the class in an evaluation of how well a job carried out by the whole class has been done and how group work can be improved. In the blanks below, describe other provisions being made for fast and slow learners. Check extent each is being used.			

DESCRIPTION OF OUTSTANDING PROGRAMS

NOTE—If you have had unusual success in adapting your social studies program to rapid learners, to slow learners, or to both, would you please tell about your program on separate sheets of paper which you append to the questionnaire? Please describe: (1) what is taught, (2) how it is taught, (3) to whom it is taught. We should like to have your permission to use this material for publication purposes, if possible.

Name of teacher providing information: _____

School address: _____

PLEASE RETURN COMPLETED FORM TO YOUR PRINCIPAL

School No. _____

PART III-C

INSTRUCTIONAL PROVISIONS AND PROCEDURES IN MATHEMATICS

(NOTE — To be answered by Head or senior teacher of Mathematics Department.)

The purpose of this study is to locate promising practices which can be publicized for the benefit of the many teachers seeking help in educating rapid and slow learners. Because the holding power of the school is increasing and high school enrollments are about to surge upwards, this problem will soon become even more acute than it is today. Your contribution to this study will be appreciated.

Enter total number of students enrolled in all mathematics classes. _____

Enter number of classes in which enrollment is: (a) less than 10 _____, (b) 10-19 _____, (c) 20-29 _____,

(d) 30-39 _____, (e) 40-49 _____, (f) over 50 _____

Enter number of mathematics teachers in department: Full-time: Men _____ Women _____

Part-time: Men _____ Women _____

Do you have a two-track program in mathematics? Yes ☐ No ☐ If Yes, specify grades. _____Do you have a three-track program in mathematics? Yes ☐ No ☐ If Yes, specify grades. _____

Directions: In answering the items below, consider only the teacher in your department who is most effective in working with (a) rapid learners and/or (b) slow learners. If no teacher is extremely effective with these students, please return this blank to your principal. For this study, rapid learners are defined as those among the highest 15 to 20 percent in general intelligence; slow learners are those among the lowest 15 to 20 percent. In the appropriate columns, check each item to indicate the extent your extremely effective teachers are using the following practices in teaching: (a) rapid learners and (b) slow learners.

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Give individual assistance to pupils after school hours.....			
			2. Provide individual supervision and guidance during class.....			
			3. Assign simple drill problems.....			
			4. Assist students in learning vocabulary and reading skills peculiar to mathematics.....			
			5. Emphasize the social uses of mathematics.....			
			6. Encourage students to make scrapbooks and prepare graphic materials showing uses of mathematics.....			
			7. Emphasize manual activities which illustrate mathematical principles.....			
			8. Encourage students to read simple stories about mathematics or famous mathematicians.....			
			9. Require all students in a given class to do approximately the same amount and type of work for same mark.....			
			10. Encourage students to compete for awards given for superior scholarship.....			
			11. Encourage able students to assist slower students.....			
			12. Encourage study of the applications of mathematics to science.....			
			13. Encourage students to make aids to instruction for the classroom.....			
			14. Display student's work on bulletin board.....			
			15. Provide a mathematics laboratory.....			
			16. Make individual assignments based on student's ability.....			

[illegible]

NOTE.—If you have had unusual success in adapting your mathematics program to rapid learners, to slow learners, or to both, would you please tell about your program on separate sheets of paper which you append to the questionnaire? Please describe: (1) what is taught, (2) how it is taught, (3) to whom it is taught. We should like to have your permission to use this material for publication purposes, if possible.

PLEASE RETURN COMPLETED FORM TO YOUR PRINCIPAL

School No. _____

PART III-D

INSTRUCTIONAL PROVISIONS AND PROCEDURES IN SCIENCE

(Note—To be answered by Head or senior teacher of Science Department)

The purpose of this study is to locate promising practices which can be publicized for the benefit of the many teachers seeking help in educating rapid and slow learners. Because the holding power of the school is increasing and high school enrollments are about to surge upwards, this problem will soon become more acute than it is today. Your contribution to this study will be appreciated.

Enter total number of students enrolled all science classes: _____

Enter number of classes in which enrollment is: (a) less than 10 _____, (b) 10-19 _____, (c) 20-29 _____, (d) 30-39 _____, (e) 40-49 _____, (f) over 50 _____

Enter number of science teachers in department: Full-time: Men _____ Women _____

Part-time: Men _____ Women _____

Directions: In answering the items below consider only the teacher in your department who is most effective in working with (a) rapid learners and/or (b) slow learners. If no teacher is extremely effective with these students, please return this blank to your principal. For this study, rapid learners are defined as those among the highest 15 to 20 percent in general intelligence; slow learners are those among the lowest 15 to 20 percent. In the appropriate columns, check each item to indicate the extent your extremely effective teachers are using the following practices in teaching: (a) rapid learners and (b) slow learners.

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Help students understand scientific reasons for fire safety rules, sanitary standards, and/or first-aid practices.....			
			2. Arrange for students to become assistants for class, laboratory, and/or science club work.....			
			3. Use contracts and other methods that provide for learning activities at different levels.....			
			4. Help students to visit establishments where scientific products are made and/or used.....			
			5. Include student activities to stress basic skills such as reading tables, observing experiments, and spelling common science words.....			
			6. Stimulate students to plan and carry on projects of the experimental research type.....			
			7. Instruct students to repair simple home appliances, such as toasters, extension cords, and lamps.....			
			8. Arrange for students to attend meetings of science teachers and scientists.....			
			9. Encourage students to use scientific encyclopedias and references in preparing science reports.....			
			10. Help students to understand how tools, such as the hammer, plane, drill, and screwdriver operate.....			
			11. Teach students to read and evaluate science materials from newspapers.....			
			12. Help students to analyze science information in statistical form.....			
			13. Help students to participate in local science fairs and congresses.....			
			14. Encourage students to read stories about famous scientists.....			
			15. Discuss with students the qualities that help a person hold a job in industry.....			

PART III-D--Continued

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			16. Encourage students to engage in recreational reading of science fiction.			
			17. Expect students to make written reports on scientific happenings for the school paper.			
			18. Encourage students to collect clippings on the uses made of science in everyday life.			
			19. Help pupils participate in pupil-teacher planning to discover real problems for study in science.			
			20. Arrange for doctors, nurses, engineers, and others to meet with science classes.			
			21. Encourage students to study the science that underlies proficiency in such special interests as music, art, and history.			
			22. Arrange for students to try competitive science examinations and aptitude tests.			
			23. Guide students to note superstitions and other biases that block fair consideration of scientific evidence.			
			24. Encourage students to participate in adult activities such as providing information about a sewage disposal system.			
			25. Announce and conduct discussion of radio, television, and movie presentations of scientific events.			
			26. Give students experiences in helping with science demonstrations.			
			27. Guide students to know the values of foreign languages for work in the sciences.			
			28. Insist that students report science experiments honestly and accurately.			
			29. Guide students to evaluate science notebook work against appropriate standards.			
			30. Make use of puzzles and magic in teaching science.			
			In the blanks below, describe other provisions being made for fast and slow learners. Check extent each is being used.			

DESCRIPTION OF OUTSTANDING PROGRAMS

Note—If you have had unusual success in adapting your science program to rapid learners, to slow learners, or to both, would you please tell about your program on separate sheets of paper which you append to the questionnaire? Please describe: (1) what is taught, (2) how it is taught, (3) to whom it is taught. We should like to have your permission to use this material for publication purposes, if possible.

Name of teacher providing information: _____

School address: _____

PLEASE RETURN COMPLETED FORM TO YOUR PRINCIPAL

School No. _____

PART III-E

INSTRUCTIONAL PROVISIONS AND PROCEDURES IN HOME ECONOMICS

(NOTE - To be answered by Head or senior teacher of Home Economics Department.)

The purpose of this study is to locate promising practices which can be publicized for the benefit of the many teachers seeking help in educating rapid and slow learners. Because the holding power of the school is increasing and high school enrollments are about to surge upwards, this problem will soon become even more acute than it is today. Your contribution to this study will be appreciated.

Enter total number of students enrolled in all home economics classes. _____

Enter number of classes in which enrollment is: (a) less than 10 _____ (b) 10-19 _____ (c) 20-29 _____

(d) 30-39 _____ (e) 40-49 _____ (f) over 50 _____

Enter number of home economics teachers in department. Full-time Men _____ Women _____

Part-time Men _____ Women _____

Directions. In answering the items below consider only the teacher in your department who is most effective in working with (a) rapid learners and/or (b) slow learners. If no teacher is extremely effective with these students, please return this blank to your principal. For this study, rapid learners are defined as those among the highest 15 to 20 percent in general intelligence; slow learners are those among the lowest 15 to 20 percent. In the appropriate columns, check each item to indicate the extent your extremely effective teachers are using the following practices in teaching (a) rapid learners and (b) slow learners.

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Provide opportunity to interpret statistical and graphic data about homes and families			
			2. Closely supervise class activities			
			3. Encourage pupils to plan ways to interpret the homemaking program			
			4. Use as learning experiences personal and family problems that are real for pupils			
			5. Provide additional individual help outside of class			
			6. Encourage independent study of student-selected topics			
			7. Use audio and visual aids			
			8. Encourage selection of simple projects that can be completed within a short period of time			
			9. Emphasize ways of conserving time and energy in class activities			
			10. Arrange field trips to homes, stores, factories, etc.			
			11. Provide pupils opportunity to learn about jobs which make use of homemaking skills			
			12. Provide opportunity for pupils to assist in making plans for and keeping department accounts			
			13. Allow pupils to select projects of varying degrees of difficulty			
			14. Provide for much repetition			
			15. Provide opportunity to develop housekeeping skills through routine care of homemaking rooms			
			16. Encourage extensive use of the school and homemaking department libraries			

PART III-B—Continued

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			17. Provide pupils opportunity to investigate jobs open to professionally trained home economists			
			18. Allow pupils to repeat projects or activities to develop skills			
			19. Provide for pupil participation in choosing and planning learning experiences			
			20. Encourage pupils to carry on experimental projects (with various homemaking activities)			
			21. Encourage pupils with creative ideas, interests, and talents to develop them			
			22. Provide for pupil participation in setting goals and evaluating program			
			23. Encourage pupils to prepare articles about homemaking activities for school and local papers			
			24. Emphasize manipulative activities			
			25. Encourage each pupil to do as much as his ability permits			
			26. Encourage pupils to carry on home projects			
			27. Demonstrate manipulative processes and explain each one with illustrative material			
			28. Allow pupils to serve as assistant teachers			
			29. Encourage pupils to work at own rates of speed			
			30. Provide simple and graphic reference materials			
			In the blanks below, describe other provisions being made for fast and slow learners. Check extent each is being used.			

DESCRIPTION OF OUTSTANDING PROGRAMS

NOTE.—If you have had unusual success in adapting your home economics program to rapid learners, to slow learners, or to both, would you please tell about your program on separate sheets of paper which you append to the questionnaire? Please describe: (1) what is taught, (2) how it is taught, (3) to whom it is taught. We should like to have your permission to use this material for publication purposes, if possible.

Name of teacher providing information: _____

School address: _____

PLEASE RETURN COMPLETED FORM TO YOUR PRINCIPAL

School No. —

PART III-F

INSTRUCTIONAL PROVISIONS AND PROCEDURES IN INDUSTRIAL ARTS

(NOTE.—To be answered by Head or senior teacher of Industrial Arts Department.)

The purpose of this study is to locate promising practices which can be publicized for the benefit of the many teachers seeking help in educating rapid and slow learners. Because the holding power of the school is increasing and high school enrollments are about to surge upwards, this problem will soon become even more acute than it is today. Your contribution to this study will be appreciated.

Enter total number of students enrolled in all industrial arts classes. _____

Enter number of classes in which enrollment is: (a) less than _____, (b) 10-19 _____, (c) 20-29 _____,
(d) 30-39 _____, (e) 40-49 _____, (f) over 50 _____.

Enter number of industrial arts teachers in department: Full-time: Men _____ Women _____

Part-time: Men _____ Women _____

Directions: In answering the items below consider only the teacher in your department who is most effective in working with (a) rapid learners and/or (b) slow learners. If no teacher is extremely effective with these students, please return this blank to your principal. For this study, rapid learners are defined as those among the highest 15 to 20 percent in general intelligence; slow learners are those among the lowest 15 to 20 percent. In the appropriate columns, check each item to indicate the extent your extremely effective teachers are using the following practices in teaching: (a) rapid learners and (b) slow learners.

Extent of use for Rapid Learners			TECHNIQUES, PROVISIONS, AND PROCEDURES	Extent of use for Slow Learners		
NONE	SOME	MUCH		NONE	SOME	MUCH
			1. Place emphasis on the development of simple handtool-using skills.			
			2. Provide opportunities for intensive repetitive tool-using exercises.			
			3. Provide additional time in the industrial arts shop for students.			
			4. Arrange for students to have first-hand observations of industry and industrial processes carried on in the community.			
			5. Encourage students with original, inventive, and creative ideas, interests, and talents to carry out their ideas.			
			6. Require expert degree of craftsmanship of students.			
			7. Encourage cooperative pupil-teacher planning of projects and activities.			
			8. Encourage pupils to undertake simple projects which can be completed in short amounts of time.			
			9. Conduct demonstrations of processes and operations students use in constructing projects.			
			10. Provide facilities and encourage students to test the physical properties of commonly used industrial materials, such as metals, plastics, wood, textiles, leather, paper, etc.			
			11. Encourage students to read, observe, and evaluate various types of shop management plans involving personnel, equipment, and supplies used in schools and industry.			
			12. Have students read books about inventors, scientists, industrialists, and industrial problems.			
			13. Provide opportunities for students to apply, test, and experiment with science principles in electronics, metallurgy, mechanics, kinematics, etc.			
			14. Urge students to read about, discuss, and observe the effects of technological development and industrialization in a community, State, or region.			

Extent of use for Rapid Learners				Extent of use for Slow Learners		
NONE	SOME	MUCH	TECHNIQUES, PROVISIONS, AND PROCEDURES	NONE	SOME	MUCH
			15. Encourage and assist students to develop industrial arts hobby interests through home work shops and other leisure time activities.			
			16. Inform students about and urge participation in craftsmen's fairs, exhibitions, and industrial arts awards programs.			
			17. Develop home mechanics skills essential in the maintenance of the home and its mechanical appliances.			
			18. Develop consumer literacy through units on the selection and use of industrial products.			
			19. Place emphasis upon student projects which develop problem solving skills and critical thinking.			
			20. Teach students to interpret statistical and graphic data about industry.			
			21. Encourage students to investigate and become familiar with labor union policies and activities.			
			22. Develop consumer skills and knowledge by having students compare the design, construction, materials used, operation, and costs of common household appliances.			
			23. Urge students to make extensive use of the school and/or the industrial arts shop library.			
			24. Have students read about, observe, and discuss modern industrial processes and techniques which cannot be carried on in the school.			
			25. Give students opportunities for experiences in managing the industrial arts shop, supplies, records, safety, etc.			
			26. Assist students in arranging interviews with industrialists, employers, labor, and business leaders in the community about industrial problems and trends.			
			27. Require high degrees of precision and accuracy in projects pupils construct.			
			28. Require students to follow teacher directions and teacher-made plans.			
			29. Encourage students to work on group projects involving the application of production methods and techniques.			
			In the blanks below, describe other provisions being made for fast and slow learners. Check extent each is being used.			

NOTE.—If you have had unusual success in adapting your industrial arts program to rapid learners, to slow learners, or to both, would you please tell about your program on separate sheets of paper which you append to the questionnaire? Please describe: (1) what is taught, (2) how it is taught, (3) to whom it is taught. We should like to have your permission to use this material for publication purposes, if possible.

School address:

O